THE DOCK & HARBOUR AUTHORITY

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Editorial.

The Port of Amsterdam.

In previous issues of *The Dock and Harbour Authority* several references have been made to various undertakings which have been carried out at the Port of Amsterdam, the chief of which were the new lock entrance to the North Sea Canal and the commencement of the construction of the Coen Dock; and, now owing to the rapid increase of shipping and the continual demand for more quayage and wharfage and open-air storage, it has been found necessary to undertake further extensions.

After careful consideration, the plans for the future extensions comprise three separate projects: a large West Dock, a new Timber Dock, and the Coen Dock, the latter of which was commenced during the war.

The West Dock, when completed, will give available space for ocean steamers on the south side, and the north side will be developed and factories will be built on it.

The new Timber Dock will occupy a space of 750 acres and there will, therefore, be double the amount of space available as there is in the present timber dock.

Regarding the Coen Dock, this is to be divided up so that, when completed, it will be possible for loading and discharging on either side of the quay. The one side will be used for the berthing of ocean-going ships where they can load or discharge into warehouses, and the other side would be available for river boats for loading or discharging.

To give an idea of the vast increase in shipping at Amsterdam in recent years, it is only necessary to say that, since 1921, figures have practically doubled as regards volume of goods traffic entered and cleared by sea. The statistics of goods traffic entered and cleared by river and canal have shown a bigger increase still.

The figures for 1921 of vessels entering by sea are 2,146,635 tons, as against 4,025,782 tons in 1930. Clearances by sea in 1921 were 1,296,167 tons and 1,978,377 tons in 1930. In 1921 river and canal traffic that entered the port of Amsterdam was 872,766 tons, as against 2,107,516 tons in 1930, and clearances showed 205,748 tons in 1921, the traffic having increased to the remarkable figures of 779,253 tons in 1930. These figures are in tons of 1,000 kilogrammes.

An illustrated article written by L. Boogerd, Director of the Seaport and Airport at Amsterdam, and Jhr. J. E. Van Heemskerck Van Beest, Chief Engineer, Chief of the Docks Division of the Public Works Department of the Corporation of Amsterdam, giving the history of the Port of Amsterdam and various problems with which the port was faced, appears on another page, and also forms the Supplement for this month.

Manchester Ship Canal Company.

The traffic receipts of the Manchester Ship Canal Co. for the half-year ended June 30th, 1931, amounted to £592,886, and this compared with £683,809 for the corresponding period of last year shows a decrease of £90,923. The net revenue of the whole of the undertaking for the first six months of 1931, after providing for interest and fixed charges, was £75,335 less than the corresponding period of 1930.

The traffic receipts for the month of June, 1931, showed a decrease of £21,083 compared with June of 1930. The figures for this year being £100,485 against £121,568 last year.

The New Graving Dock at Southampton.

Work on the new graving dock at Southampton is proceeding apace and the preliminary work which consisted of cutting off a considerable area of mudland from the River Test was completed on June 30th.

The enclosing of this area has occasioned working day and night for the last six months. In all, 7,000-ft of interlocking steel sheet piling was driven.

The second phase of the work, which consists of excavating, has commenced, and this will involve lifting 1,250,000 tons of material.

The first part of the scheme has been carried out to schedule, and the urgency for the completion of this new graving dock, which when finished will be 1,200-ft. long and is being built expressly for the purpose of accommodating the giant Cunarder at present under construction, allows of no waste of time, as it is to be completed by the autumn of 1933.

Problem of Dock Appliances.

To what extent is the backwardness of our ports due to the low rates of wages paid before the war? This question might well be asked after hearing the speech of Mr. Hugh R. Rathbone, of Liverpool, who, by the way, is a member of the Mersey Docks and Harbour Board. He said that in Liverpool they were now not suffering so much from high wages, though they were a factor, but from the low wages of the pre-war days. Before the war labour was so cheap that there was no inducement to the master porters, master stevedores and shipowners to introduce labour-saving apparatus. The consequence was that they were badly placed now to compete with foreign ports. Wages were 14s. per day, they had very little labour-saving apparatus and if they were to introduce it now in a wholesale way, it would probably lead to a strike. Dredging and other works tended normally to make Liverpool a dear port in comparison with Antwerp, Amsterdam and Rotterdam, which distributed goods that ought to be distributed from this country. That was because the labour-saving gear in those ports was so complete that they could afford to pay high wages, though perhaps not so high as ours, and yet claim trade that should come to these shores.

Middlesbrough Centenary.

Middlesbrough celebrated its centenary in the first week of July, and its brief history is a story of remarkable growth. The movement to develop the Tees started in 1808, but it was not until 1852, when the control of the waterway was placed in the hands of the Tees Conservancy Commissioners, that anything of note was accomplished. Their labours have changed the lower reaches of the Tees from a dangerous stream with innumerable and dangerous sandbanks to a valuable and navigable waterway. The North Gare and South Gare breakwaters have been constructed, more than 3,000 acres of foreshore have been reclaimed, dry docks and wet docks have been constructed, and almost everything possible done to develop the trade of the port of the Tees. To show the change that has been effected in the river it may be mentioned that in 1864 the largest cargo shipped was 708 tons, while recently a steamer arrived with a cargo exceeding 10,000 tons. The Middlesbrough dock of the London and North-Eastern Railway Co., which covers 25¼ acres, has been specially designed for the shipment of iron, steel and other local products.

Harbour Construction at Churchill, Manitoba.

Work on the elevator and docks at Churchill, Manitoba, is now actively proceeding, and 2,000 men are now employed on construction.

The steel fabric of the new 2,500,000-bushel elevator is now being built, and the brick walls of the power house are already up. The contractors on this job are employing about 800 men, and the building is expected to be ready to handle test shipments of grain by the Hudson Bay route to Europe during the coming autumn season. The construction of the harbour works is being carried on simultaneously, and during the summer about 900-ft. of massive dock will be added to the 700-ft. constructed last year.

While the harbour work and elevator is being constructed at the expense of the Dominion Government, the town site is owned by the Manitoba Government, which will retain permanent possession of it, granting long-term leases as required. The latter Government will supervise the laying out of the streets and lots and plans to erect two hotels and at least one boarding house this summer.

North-East Coast Notes.

Reduction in Dues at Newcastle Quay.

A SUBSTANTIAL reduction in Quay dues has been made by the Trade and Commerce Committee of Newcastle Corporation, with the object of attracting large overseas vessels to the town. Where the cargo to be discharged is less than 25 per cent. of the net registered tonnage, the Committee has reduced the charge of 4d. per ton to 1d. per ton on net registered tonnage, plus 1d. per ton on the cargo discharged. Thus a ship of 7,000 tons carrying, say, a cargo of 400 tons, representing gross dues of £116 13s. 4d. is entitled to a rebate of £85, as compared with a rebate of £56 under the old system. The new scale of charges will remain in force until the end of the financial year.

The Deputy Lord Mayor (Alderman Walter Lee), who is Chairman of the Trade and Commerce Committee, explained that in 1911 the total net registered tonnage of vessels berthed at Newcastle Quay was 102,469 as compared with 390,352 in 1930. The average tonnage of vessels increased from 966 tons to 2,156. A number of large vessels come to Newcastle with small parcels of cargo, having discharged the bulk of their cargo in London, at Hull, or other ports, and the Committee wanted to make it worth their while to continue coming into the Tyne, so that when trade improved they would be able to help in developing the export trade of the port. The Tyne's trans-Atlantic trade had been very considerably developed since the war. In 1913, which was a boom year for Tyneside, 94 trans-Atlantic vessels, with a registered tonnage of 119,461 tons, visited Newcastle Quay, compared with 181 vessels of this class, with a tonnage of 390,352, in 1930. Actually they had 1,538 vessels of all classes at Newcastle Quay last year, with a total tonnage of 1,010,856.

Sunderland Developments.

The reduction of dues that has been made at most of the North-East Coast ports has created a keen rivalry, with somewhat curious results. Thus it was stated on Newcastle 'Change on July 8th, that about 30,000 tons of Durham coal which might have been shipped on the Tyne were going to the Wear during the next few days on account of lower shipping charges in the aggregate. It was stated that the difference in favour of South Docks, Sunderland, on an inclusive scale, is about 1⅞d. per ton.

Sunderland Town Council have accepted the tender of Messrs. K. L. Kalis, Sons and Co., Ltd., of London, for carrying out the dredging work required in connection with the deep water quay, and that of Messrs. Peter Lind and Co., London, for raising supports from a level of 3-ft. above low water mark to the level of the underside of the quay deck.

At a meeting of the River Wear Commissioners it was reported that Sir William Arrol and Co. had completed their contract for a new quay and roadway to No. 23 coal staith at the South Docks, and that the Cleveland Bridge and Engineering Co. were making good progress with the superstructure.

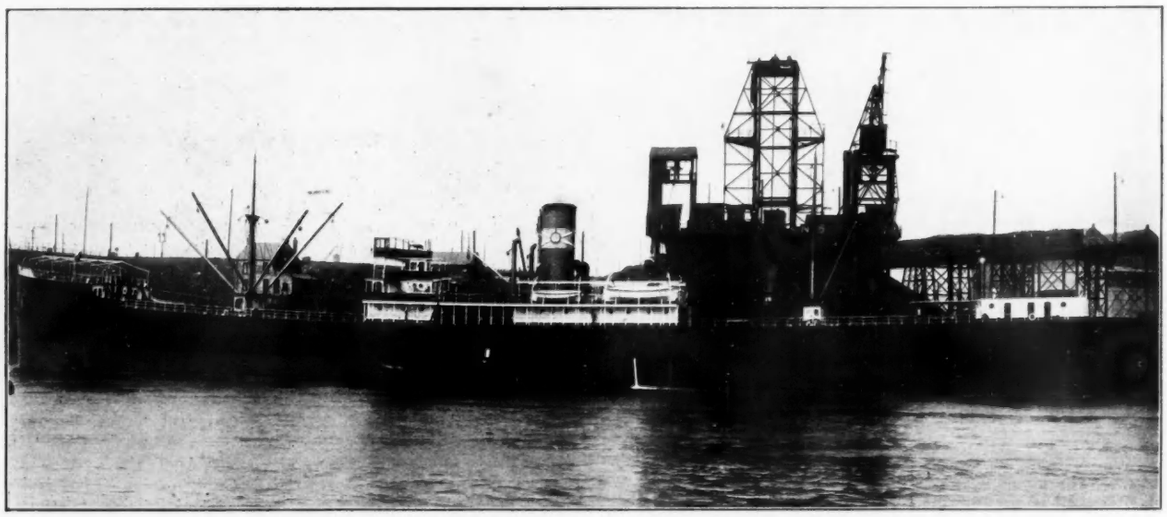
The returns of coal and coke shipped from the Wear during the first five months of the year still show a decrease when compared with the 1930 figures. The coal shipped totalled 1,903,972 tons, a decrease of 9 per cent., but the coke output is still increasing, and was 10 per cent. up on last year, the shipments being 33,400 tons. The total imports of goods for the five months were 113,136 tons against 146,711 tons in the corresponding period of 1930.

Smart Work at Docks.

The steamer " Upo-Mendi " arrived at the South Docks, Sunderland, at 6.50 a.m. on July 2nd, began to load at No. 21 staith at 7.30 a.m., and by 5.40 a.m., next day had taken on board 5,249 tons of cargo and bunkers, the vessel leaving at night with 6,300 tons aboard.

A rapid loading feat was also accomplished by the London and North-Eastern Railway Co.'s workers at Tyne Dock recently when the s.s. " Camberwell " received a cargo of coal and bunkers in almost record time. The ship began to load at 6.45 p.m. and finished loading 2,357 tons of cargo and 49 tons of bunkers at 10.30 p.m., an average of 646 tons per hour.

The figures of coal shipments were placed before the Blyth Harbour Commissioners in June, and showed that the quantity despatched in the preceding five months was 1,884,767 tons against 2,166,645 in 1930. Mr. Ridley Warham, the Chairman, pointed out that this was a decrease of 2 per cent. Recent shipments had not been very satisfactory, he said, and showed a further decrease during the last fortnight in June, owing to the operation of the quota imposed by the Coal Mines Act.



Large Vessel at Tyne Improvement Commissioners No. 5 Whitehill Point Staith, Shipping Coal by Anti-Breaker.

Report of the Tees Conservancy Commissioners Adopted.

The Tees Conservancy Commissioners have decided that in future all tolls, rates and dues shall be collected within the calendar month in which they are incurred. A statement dealing with the income and expenditure of the Commission was submitted by the General Manager (Mr. F. T. Nattrass), and the Board decided to adopt the proposals set out in the report. Mr. Nattrass suggested the temporary curtailment of expenditure during the present period of trade depression.

Meeting of the Tyne Commissioners.

At the July meeting of the Tyne Commissioners Mr. Francis Priestman, in moving the adoption of the Finance Committee's report, said he thought there would be a much more satisfactory financial position disclosed at the end of the year than might have been expected having regard to the state of trade. There were many factors militating against local and national trade at present, but given nothing worse during the next six months than had been experienced during the last, there would be, he thought, every reason for congratulation when the financial statement was put before them at the beginning of next year.

The coal and coke shipments during the past six months totalled 7,256,686 tons, compared with 8,846,018 tons in the corresponding period of last year, a decrease of 18 per cent.

The Commissioners approved the principle of a scheme for the erection of a new coal staith at the west end of Northumberland Dock, which will cost about £80,000, and is to be the joint enterprise of the Commissioners and Hartley Main Collieries, Ltd.

North-East Coast Notes—continued

Personalia.

Mr. Philip B. Johnson, who had been for many years in charge of the installation of machinery, and also of the official trials of vessels engined by the firm, has been appointed General Manager in charge of Messrs. R. and W. Hawthorn Leslie's St. Peter's works, Newcastle, in succession to the late Mr. Armstrong.

Mr. F. Cresswell Pyman, of West Hartlepool, Managing Director of Messrs. William Gray and Co., Ltd., has joined the Board of the Mercantile Dry Docks Co., Ltd., Jarrow. He is filling the vacancy caused by the resignation of Mr. Walter H. S. Pyman, of Whitby, who had been for nearly twenty years a director of the Company and retired on account of ill-health.

The Port of New York

Latest Data issued by the Bureau of Commerce

Maintaining New York Harbour Channels.

THE maintenance of adequate depth of water in the navigable channels of the harbour at the Port of New York is, as in other ports of the United States, the function of the Corps of Engineers of the United States Army.

The great number of ocean-going vessels using the harbour at New York, about one entering or leaving every ten minutes during the daylight hours, makes it desirable that the main channels be kept free as much as possible of obstructing engineer plant. Usually, dredging operations call for the presence of not only the dredge itself, which is anchored on the site, but also such attendant plant as scows, to carry away the dredged material, and tugs.

The maintenance of channel depths by dredging is carried on almost continuously in the 100 miles, approximately, of main channels in New York Harbour, and to overcome the necessity of obstructing the fairways, the Corps of Engineers has adopted the use of a type of mobile equipment known as the seagoing hopper dredge. This machine is exactly what its name implies; a self-propelling dredge having a hopper into which the mud, sand, clay, etc., from the harbour bottom is received and which then proceeds to sea where the load is dumped.

The appearance of the hopper dredge is very much like that of an ocean freighter. Propelled by its own power, it moves slowly over the area to be dredged, pumping the material into its hold by means of a pipe-line dragged on the bottom. The end of the pipe-line is equipped with a scraper which loosens the material, making it possible to remove sand and hardpan, as well as mud, though obviously it cannot be used for dredging rock.

Three of these machines, the "Manhattan," "Atlantic" and "Navesink," are in use in New York Harbour at the present time, dredging in Bay Ridge Channel. Another dredge usually employed in New York Harbour is the "Marshall," now at work in Buzzards Bay, near the entrance to the Cape Cod Canal.

The capacities of the hoppers of these machines are from 2,200 to 2,600 cubic yards, which are filled in from 1½ to 3 hours of pumping, depending upon the character of the material. When filled, the dredges put to sea, dumping their loads at a point about 3 miles south of Ambrose Lightship, which is about 25 miles from the Battery. The time for the round trip to and from the dump is from 5 to 6 hours from the lower tip of Manhattan Island. Under normal conditions, a dredge takes 2 to 3 loads to sea per day, making an average of 125,000 to 150,000 cubic yards of material removed per month by each dredge.

The advantage of these machines lies not only in that they do not obstruct channels while at work, but also in the ready manner in which they may shift their operations from one point to another. The War Department was recently advised that a ship scheduled to arrive at Albany at a certain time would be unable, because of her draft, to cross a bar in the Hudson River in the vicinity of Germantown, about 100 miles above New York. The dredge "Marshall" was despatched to the site, which she reached in about 8 hours, commencing immediately to cut through the bar. The job was finished in time to permit the vessel to pass without interruption.

Normally, four seagoing hopper dredges are at work in the waters of New York Harbour, their principal use being to maintain the depth in the various channels, where shoals may form from time to time. One of these dredges, the "Raritan," was sunk in collision at the Narrows some time ago. Salvage operations are in progress, and it was expected that the vessel would be raised by July 1st. Three or four months of overhauling in dry dock will then fit her to return to work.

Vessel Movements in Foreign Trade.

The number of entrances and clearances of vessels in foreign trade at the Port of New York continue to be below last year's figures, as the records of vessel movements during the month of May show.

	May, 1931		May, 1930	
	No. of Vessels	Vessel Tonnage	No. of Vessels	Vessel Tonnage
Entrances ...	478	2,434,601	592	2,697,642
Clearances ...	511	2,542,351	643	2,955,826

Value of Foreign Trade at the Port of New York.

The value of foreign trade at the Port of New York during the month of April, 1931, amounted to $171,617,000, a decline of 39 per cent. as compared with the same period last year, when the foreign trade amounted to $280,369,000. This decline, however, is no more pronounced at New York than at other United States ports, as exports and imports at the Port of New York during April were still 43 per cent. of the whole United States.

Exports were $80,714,000 as against $132,003,000 in April, 1930, and imports were $90,903,000 in comparison with $148,366,000 a year ago. Both exports and imports declined 39 per cent.

	April		Net Change	
	1931	1930	Amount	Per Cent.
	$	$	$	
Exports	80,714,000	132,003,000	—51,289,000	—38.7
Imports	90,903,000	148,366,000	—57,463,000	—38.8
Exports and Imports ...	171,617,000	280,369,000	—108,752,000	—38.8

Gold Movement via the Port of New York.

Very little notice is given to the large amount of gold which moves in and out of this port every year. Yet, it comprises more than 55 per cent. of the entire gold movement of the United States, if that which moved over the Canadian border is excluded.

Due to the loss of interest and the high cost of insurance while in transit, gold is always shipped by the speediest vessels, which practically confines any Atlantic movement to the Port of New York, the exclusive United States terminal for the world's fastest express liners.

During the year 1930, the total value of the foreign gold movement of the United States amounted to $80,364,460 which crossed to or from Canada. After deducting Canadian shipments, the total for the country represents a value of $431,656,567, of which the Port of New York accounted for $235,751,258, or more than half, $87,996,792 being exported and $147,754,466 imported.

Import Tariff Revenue at the Port of New York.

One of the principal items of revenue to the Government is derived through the imposition of a duty assessed on certain articles imported from foreign countries.

The total of all duties collected in the United States for the fiscal year ended June 30th, 1930, amounted to $587,001,000, of which $325,151,968, or more than 55 per cent., was collected at the Port of New York. This is more than twice as much as the combined collections at Boston, Philadelphia, Baltimore, New Orleans and San Francisco.

The collection of this amount at New York entailed a staff of 3,731 employees in the Customs Division, the total cost to the Government being 2.6 per cent. of the revenue collected.

In order to more clearly set forth the huge import trade at the Port of New York, and the consequent large amount of duties collected, compared with the five other leading ports of the United States, the following data as of the fiscal year ended June 30th, 1930, is tabulated:—

	Total Imports	Per Cent. of U.S.	Duties Collected	Per Cent. of U.S.
	$		$	
Baltimore	112,909,517	2.9	12,804,861	2.2
Boston	219,470,638	5.7	37 353,830	6.3
Philadelphia	207,287,191	5.4	47,334,281	8.1
New Orleans	171,345,971	4.5	26,770,418	4.5
San Francisco	184,594,630	4.8	13,380,248	2.3
Total—Five Ports	895,607,947	23.3	137,643,638	23.4
New York	1,807,472,628	47.0	325,151,968	55.4
United States	3,848,864,144	100 0	587,001,000	100.0

The Port of New York—continued

Grain Exports.

Exports of domestic and Canadian grain during the month of April were 8 per cent. greater in volume than during the same period last year. There was a slight decline in exports of Canadian grain, which was more than offset by increased volumes of domestic grain shipments.

	April			
	1931 Bushels	1930 Bushels	Net Change Amount	Per cent.
Through the Port of New York—				
Domestic and Canadian Grain	4,101,000	3,791,000	+310,000	+8.2
Domestic Grain	535,000	138,000	+397,000	+287.7
Canadian Grain	3,566,000	3,653,000	—87,000	—2.4

Intercoastal Trade.

A study of cargoes carried between the Atlantic and Pacific ports as reported by the U.S. Shipping Board for the fiscal year ending June 30th, 1930, reveals that, in total volume handled, New York far outranks any other Atlantic port. Out of a total of 8,852,298 tons that moved in and out of ports in the North Atlantic district, 3,997,889 tons, or better than 45 per cent., is credited to New York.

Iron and steel continues to head the list of outbound commodities with 126,400 tons shipped from this port, while 1,807,061 tons of petroleum and its products lead in the opposite movement.

Other principal commodities received or shipped from the Port of New York during the same period are as follows:—

INBOUND	Tons
Lumber and Logs	855,828
Canned Fruits	153,946
Dried Fruits	85,479
Vegetables and Vegetable Products	84,220
Paper Stock	62,785
Copper and Manufactures	41,299
Wheat Flour	36,561
Canned Salmon	31,041
Ores and Metals	28,084
Chemicals	14,597
OUTBOUND	**Tons**
Chemicals	93,271
Vegetables and Vegetable Products	38,809
Paper Stock	37,336
Machinery	34,824
Petroleum and Products	20,550
Textiles	18,155
Copper and Manufactures	17,343
Non-metallic Minerals	13,232
Vehicles	6,487
Rubber and Manufactures	5,288

Steamship Passenger Traffic.

The number of alien immigrants arriving at the Port of New York continues to be about 15 per cent. of that of last year and will probably remain so until such time as there is some relaxation of the policy of the Immigration Department. Although certain entrance quotas are alloted to each country, actual admittances for this fiscal year will be found to be well under the allowable number in most instances. This indicates the close scrutiny that our U.S. Consuls abroad have been instructed to give to all applications for visas.

	April 1931	April 1930
INBOUND—		
Aliens – Immigrant	2,275	14,936
Non-Immigrant ...	9,545	11,537
U.S. Citizens	20,301	22,424
Total ...	32,121	48,897
OUTBOUND—		
Aliens—Emigrant	2,445	2,447
Non-Emigrant	9,684	9,342
U.S. Citizens	16,193	17,573
Total ...	28,322	29,362
Total—Inbound and Outbound ...	60,443	78,259
Total for 4 months	216,433	267,879

Bunker Fuel Oil Deliveries for 1930.

In a port the size of New York, matters concerning any of the many industries that benefit from the thousands of steamships that sail from this harbour every year are of interest

Through the courtesy of the various oil companies we have been able to arrive at the volume of fuel oil delivered to shipside for bunker purposes.

During the year 1930 a total of 25,962,576 barrels of fuel oil, or more than a billion gallons, representing an approximate value of $25,000,000, were pumped into ships' bunkers at the Port of New York.

New York State Barge Canal.

The barge canal continues to keep ahead of last year in tonnage carried since the opening of navigation. Up to the end of May, 805,348 tons had been transported through the canal compared to 714,024 tons for the same period in 1930.

Petroleum, wheat, sugar, barley, iron and steel have all shown considerable increases and new commodities are continually appearing in the list.

Shipments of soda ash on the canal was inaugurated for the first time this year and is included in the classification of chemicals.

The volume of leading commodities carried to May 31st, and a comparison with the 1930 period, follows:—

	1931 Net Tons	1930 Net Tons
Wheat	325,065	191,064
Petroleum	168,631	149,663
Barley	45,049	—
Sugar	42,775	31,096
Iron and Steel	33,789	19,146
Sulphur	20,201	49,702
Pig Iron	17,976	27,573
Chemicals	15,689	2,033
Fertilizers	13,367	17,320

Commerce at Port Newark.

Receipts of lumber by vessel at Port Newark during the month of May, 1931, amounted to 10,351,000 board feet as compared with 16,613,000 board feet during the same period last year, a decline of 38 per cent. Lumber received by railroad and truck amounted to 452,000 board feet.

Shipments of lumber from Port Newark totalled 21,400,000 board feet, of which 7,755,000 moved by railroad and 13,645,000 by truck.

Receipts by vessel of cargo other than lumber amounted to 8,470 tons, of which 1,998 tons consisted of potatoes from Canada.

Nineteen steamers arrived at Port Newark during the month as compared with 21 a year ago.

Garston Docks: A Quick Discharge.

A cargo consisting of 3,800 tons Pyrites recently arrived at Garston Docks, Lancs, and was discharged in the record time of 18 working hours. 2,650 tons were discharged in 8 hours by four recently erected 7-ton electric cranes fitted with the latest type of grabs, the residue of the cargo—1,280 tons—being discharged by tubs in 10 hours.

Garston Docks are owned and worked by the L.M.S. Railway, who have just completed a scheme for the modernisation of cranage and other equipment for the rapid handling of cargoes at the Docks and on the Dock Estate, thereby benefiting shipowners and merchants alike.

Kiel Canal Traffic in May, 1931.

Traffic through the Canal showed an increase of 24.37 per cent. in the number of vessels and 29.58 per cent. in the capacity tonnage compared with April, but declined in comparison with the corresponding month of 1930. The figures are as follows:—

	No. of Vessels	Net reg. tons
May 1931	4,486	1,557,641
April 1931	3,607	1,202,071
May 1930	4,596	1,952,723

Vessels with cargo comprised 74.78 per cent. of the total capacity tonnage.

Of the 4,486 vessels passing through the canal in May, 1,877 vessels aggregating 1,359,415 net register tons were registered sea-going vessels comprising 1,781 freight and passenger vessels of 1,357,032 net register tons; 96 steam tugs of 2,383 net register tons. Further, 2,247 sailing vessels of 117,707 net register tons; 88 lighters and barges of 29,804 net register tons; 274 pleasure and government vessels of 50,715 net register tons.

The vessels were loaded as follows:—22 with passengers, 21 with cattle, 163 with coal, 74 with stone, 58 with iron, 238 with timber, 658 with grain, 26 with ore, 683 with other bulk goods, 988 with general cargoes, 96 with miscellaneous cargo, and 1,459 (33 per cent.) empty or in ballast.

Trade Returns of the Hull Docks.

Official returns showed that the Docks at Hull were on the whole fairly busy during the first six months of the year. Imports of grain were much in excess of the first half of 1930, the receipts of wheat and kindred cereals being 557,381 tons as compared with 491,817 tons, an increase of 65,564 tons, and of oilseeds, nuts and kernels, 346,779 tons against 278,865 tons, an increase of 67,914 tons. Imports of timber were rather less, a total of 233,968 tons comparing with 287,540 tons, a decline of 53,572 tons. Exports of coal also failed to come up to the level of a year ago. Taking all the Humber ports together (Hull, Grimsby, Immingham and Goole) the exports of coal (foreign) in the first six months were 2,114,099 tons as compared with 2,832,878 tons, a decrease of 718,779 tons, the greater part of which is due to the very marked falling-off in the second quarter.

Canadian Notes

Annual Report of Montreal Harbour Commissioners.

THE High Commissioner for Canada in London has received from the Montreal Board of Harbour Commissioners a copy of their annual report for the year ended December 31st, 1930, which document can be consulted at Canada House, Trafalgar Square, London, S.W.1, by persons interested.

According to the report in question, the statistics relative to the export grain movement from Montreal last year reveal the continuance of the depression in this trade movement which was so noticeable in 1929. Exports of grain during the year totalled 68,381,378 bushels, including 65,783,098 bushels of wheat. Exports of grain decreased by about 10 million bushels.

The number of transatlantic ships arriving in the harbour last year fell by 90 to 826, the decrease as compared with 1928 being no less than 396. In all, 1,197 ocean vessels reached the port during the year, their net registered tonnage being 4,434,589. The number of coasting vessels increased slightly, but the number of inland vessels fell from 6,368 in 1929 to 4,255 last year.

The total tonnage of imports, exports and domestic merchandise handled in the port fell during the year by about 250,000 tons, though imports rose to 3,376,182 tons from the 1929 total of 3,256,991 tons owing to larger receipts of bulk cargo commodities such as coal, wood pulp, etc. Exports fell off by more than 300,000 tons to 3,101,561 tons, the total tonnage handled in the port during the year being 9,687,769 tons, of which 3,210,026 tons was domestic tonnage.

A new high record was established in connection with the receipt of coal, the tonnage being 2,563,486 tons. British anthracite tonnage rose from 501,503 tons in 1929 to 740,803 tons last year, and there were in addition 200,651 tons of Russian anthracite. The total quantity of anthracite coal handled in the port was 1,018,727 tons, and in addition there was brought in 1,544,759 tons of bituminous coal.

Montreal continued to hold, by a considerable margin, the leadership among the grain exporting ports on the North American continent, the elevators having delivered during the year 81,669,864 bushels as compared with 48,717,000 bushels at New York.

Considerable progress was made during the year in the completion of wharves begun in 1929 and in the construction of new wharves.

Of these, 1,197 vessels 928 were British, 106 Norwegian, 45 Italian, 34 American, 23 Greek, 16 Swedish, 15 German, 14 Dutch, 11 Danish, 3 Danzig, 1 Japanese and 1 Jugoslav.

During the year the grain elevator system was utilised to less than 30 per cent. of capacity. The record year in respect of grain shipments from the port was 1928, when exports reached 211,295,379 bushels.

Heavy Grain Shipments from Montreal.

Grain shipments from the Port of Montreal from the opening of navigation in April down to the end of May have exceeded those during the record year of 1928. In May, 1928, deliveries were approximately five million bushels less than in May, 1931. In eight days grain was handled at the rate of more than two million bushels per day. Total deliveries from the beginning of the season down to the end of May reached 29,111,374 bushels.

Grain receipts in May amounted to 23,183,023 bushels, as compared with 11,706,582 bushels in May, 1930, whilst deliveries during the month amounted to 24,136,447 bushels as compared with 11,754,982 bushels in May, 1930. In one day—May 27th—receipts totalled 1,032,881 bushels and deliveries 1,650,186 bushels, showing that no less than 2,683,067 bushels of grain were handled in the port during the day.

Italy was last year the largest importer of grain through the Port of Montreal, replacing Great Britain for the first time. Italy took 16,770,954 bushels of wheat.

Vancouver Grain Exports expected to reach 75,000,000 bushels during the Crop Year.

Wheat shipments from Vancouver during the current crop year down to June 4th, reached 65,331,501 bushels, and with about 7,000,000 bushels already booked with two months of the crop year yet to run, it is considered possible that exports will be in excess of 75,000,000 bushels.

The first commercial bulk shipment of grain from Vancouver took place in 1921, and the record total handled through the port is 97,000,000 bushels.

In 1920 there were only twelve piers in Vancouver Harbour for the accommodation of deep-sea vessels; to-day there are twenty-four piers, the berthage for the same class of vessels having increased during the ten years from twenty-three to sixty-two. In 1920 the one grain elevator in operation had a capacity of 1,240,000 bushels, whilst there are now seven elevators with a total capacity of 16,205,000 bushels. In 1920, only 336 deep-sea ships entered the port, less than one per day, while last year the number was 1,188, only one less than the number entering the Port of Montreal, and an average of over three per day.

Ship repair plants now number six as compared with two in 1920; and there are two dry docks, one of which can handle a 15,000-ton vessel; none existed ten years ago. The number of oil refineries has grown from one to four during the ten years.

The chief exports from Vancouver are grain and lumber. Last year a total of 817,000,000 board feet was shipped from British Columbia ports to various foreign destinations, a large proportion of the trade being handled through the Port of Vancouver. In 1920, off-shore shipments aggregated 175,000,000-ft., so that it is evident that the trade has expanded by nearly 400 per cent. Flour exports have increased during the ten years from 100,000 barrels to 1,021,000 barrels; canned salmon from 544,000 to 1,202,000 cases; and lead and spelter from 1,463 tons to 70,452 tons. In 1930 the total volume of cargo imported was 1,516,000 tons as compared with 309,000 tons in 1920; exports last year aggregated 2,839,000 tons as compared with 379,000 tons ten years before.

Ships reached Vancouver from almost every port in the world.

The World's Largest Grain Ports.

According to figures published by "The Shipping Register and Travel Guide" (Montreal), Port Arthur and Fort William (Ontario), the twin cities at the head of Lake Superior, form together the largest grain handling centre in the world.

The two ports have 27.10 miles of dredged and sheltered harbours; 32 elevator terminals; 12½ miles of wharves and 335.21 miles of railway track. Since 1922 they have had the largest elevator capacity in the world with the most modern facilities for rapid handling, cleaning and drying of grain, and have handled more wheat annually than is dealt with at any other place.

The latest available figures for the principal grain centres in the world are those for December 31st, 1929, though in comparing the figures for Fort William and Port Arthur with the figures quoted it should be mentioned that elevator storage capacity at the Canadian twin ports was increased by several million bushels in 1930. The figures for the principal grain ports in North America at the end of 1929 are given below:—

	Number of Elevators	Storage Capacity in Bushels
Fort William-Port Arthur ...	31	86,680,000
Minneapolis-St. Paul	69	76,089,000
Chicago and District	63	53,253,000
Duluth-Superior	28	45,950,000
Kansas City	38	43,535,000

The largest quantity of grain in store at the twin cities at any one time was 82,544,000 bushels on April 19th, 1929, this total including 66,119,185 bushels of wheat. The largest quantity of oats ever in store was 15,559,880 bushels in April, 1921, and the record for barley was reached on April 17th, 1930, with 14,353,758 bushels.

Port of St. John, New Brunswick.

In connection with the recent destructive fire at the Port of Saint John (New Brunswick), the "Shipping Register" (Montreal) gives in a recent issue the following particulars relative to new work which was under construction or completed during the current year. This work consisted of two piers, each 1,250-ft. in length, and a grain elevator of three million bushels capacity, capable with its modern conveyor galleries and equipment, of supplying the new wharves as well as the existing structure; a quay wall 1,250-ft. long was also under construction.

The new piers were designed to accommodate vessels drawing up to 35-ft. of water at low tide. Ample space was being provided for trackage in front and rear of the sheds to be built on the piers, space being reserved also for industrial sites. The scheme of harbour improvements also included a highway and railway bridge connecting the east and west sides of the harbour.

Among the facilities existing in the port prior to the extensions recently in progress were fifteen berths with a total length of about 9,000-ft., the transit sheds on these berths having a total area of approximately 500,000 sq. ft.; three grain elevators with a combined capacity of 2,100,000 bushels connected with the wharves by conveyor galleries; direction-finding wireless stations; cattle-shipping sheds; warehouses; coal and oil bunkering plants; cold storage; passenger depot; hospitals; efficient towage and pilotage systems; a seamen's institute; and one of the world's largest dry docks, measuring 1,150-ft. long by 125-ft. wide.

Canadian Notes—continued

Heavy Freight Movement through the Canadian Canals in May.

Traffic through the St. Lawrence Canals in May created a new high record for the month, and the Welland Canal was also busy, handling in May the heaviest traffic experienced during the past ten years. Heavy grain shipments accounted mainly for the increases.

Grain traffic was also heavier at the Canadian and United States locks at Sault Ste Marie, but a reduction in iron ore shipments through the American locks, together with other decreases in traffic occasioned a drop in tonnage in May to a total smaller than that for any year since 1922.

There passed through the St. Lawrence Canals in May 1,165,791 tons of freight, as compared with 841,348 tons in May, 1930, and 1,094,346 tons in May, 1927, when the previous high record was attained.

Wheat shipments totalled 531,605 tons or 17,720,160 bushels as against 397,260 tons or 13,242,000 bushels in the same month a year ago; barley aggregated 148,104 tons, as against 14,954, and oats 47,144 tons compared to 14,048 tons.

Freight tonnage through the Welland Canal in May totalled 1,165,853 tons, as against 805,262 tons in May, 1930. Tonnage of soft coal rose from 181,809, or more than double the 89,626 tons carried in May, 1930. The wheat tonnage was 523,948 as compared with 445,812, and the tonnage of oats amounted to 55,732, as compared with 20,392. Barley shipments aggregated 131,036 tons, as compared with 21,672 tons in May last year.

The total tonnage through the Canadian lock at Sault Ste Marie was only 233,931, as against 271,092 tons in May, 1930.

Canada's Inland Waterways.

On June 11th the ss. " Noronic," of the Canada Steamship Lines, Ltd., entered her berth in Kingston Harbour (Ontario). The arrival of this steamer is an event of considerable significance in connection with Canadian inland navigation, as she is the largest ship which has ever reached Lake Ontario from the head of the lakes. The ss. "Noronic" is the flagship of the upper lakes passenger fleet, and was able to make the journey to Kingston through the newly finished locks of the Welland Ship Canal.

No vessel approaching the size of the ss. " Noronic " has previously navigated Lake Ontario, the steamer having been employed on the summer route from Detroit. The ship made its trip through the canal a few days in advance of the general opening of the new waterway to all vessels of under 450-ft. in length. While the ss. " Noronic " does not approach the length of some of the largest grain-carrying vessels on the upper lakes, it is in other respects a very large ship, judged by the standards of lake vessels, having a gross tonnage of 6,905 and a net register of 3,935 tons. The vessel carries both passengers and freight, having 281 staterooms, providing passenger accommodation for 552 persons. The length of the " Noronic " is 362-ft. and its beam 52-ft., so that passage through the old Welland Canal with its locks only 270-ft. in length and 45-ft. wide was entirely precluded.

The new Welland Ship Canal provides locks with a usual length of 820-ft., and they are 80-ft. in width. The navigable depth of the new canal will be 25-ft., as compared with 14-ft. in the old waterway. The use of the new Welland Ship Canal route will be attended by a great saving in time, the new waterway being 25 miles long as compared with 26.75 miles for the old canal, whilst the Ship Canal has only seven lift locks and one guard lock, as against 26 locks on the old canal. The new canal locks can each be filled in eight minutes and the time taken by the average vessel to pass through the canal is estimated at eight hours, although the journey has actually been done in six hours ten minutes.

When the new Welland Ship Canal is ready for full use, the 600-ft. freighters from the upper lakes will be able to bring their cargoes of grain to Kingston or to Prescott, but the 14-ft. St. Lawrence Canal system will still be an obstacle preventing these large ships from reaching the sea, as the locks are only 270-ft. in length and 45-ft. in breadth. Until the completion of the improvement of the St. Lawrence Waterway, which has been under negotiation for some years, Kingston and Prescott will be important points for the reshipment of grain into smaller vessels passing through the existing St. Lawrence Canals to Montreal.

First 400-ft. Grain Freighter reaches Toronto Harbour.

The ss. " Thomas Britt " recently arrived at Toronto Harbour with a cargo of 217,000 bushels of grain, being the first freighter of over 400-ft. in length to pass through the locks of the Welland Ship Canal. The amount of grain comprising her cargo is double the average brought through the old canal, but this steamer was carrying only one-half the quantity which will eventually be brought down from the upper lakes when the new canal is completely opened. The ss. " Thomas Britt " draws 18-ft. of water, a bigger draught than that of any other vessel hitherto passing through the canal, but the maximum floatage of the new waterway is not likely to be obtained for some time. When the canal is completely ready for traffic, freighters of 600-ft. in length and upwards will pass downbound to Kingston and Prescott, carrying 500,000 bushels of grain or more.

Welland Ship Canal exerting Radical Influence.

The new Welland Ship Canal, though not fully completed, has already begun to exert a radical influence on the type of shipments to Lake Ontario ports from points on the upper lakes. The first shipment of iron ore for the Steel Company of Canada to move entirely by water from a Lake Superior port arrived at Hamilton on June 17th by the large lake freighter " Collingwood," of the Canada Steamship lines. The steamer " Belvoir," with a record cargo of 3,250 tons of pig iron, from the Algoma Steel Corporation, Ltd., consigned to Toronto, is also routed via the Welland Ship Canal.

The " Collingwood," as well as being the first steamer to carry ore to Hamilton, was also the largest freighter ever to enter the port. The vessel is 386-ft. long and with her full cargo of 6,000 tons, draws 18-ft. of water, the maximum draught which the Welland Canal allows at present. The Canada Steamship Lines will now use this type of freighter to carry coal and ore between the upper lakes and Hamilton.

The cargo of the " Belvoir " is consigned to the National Iron Corporation of Toronto, and will be used principally in the manufacture of cast iron water pipes.

Large New Grain Elevator for Windsor, Ontario.

Negotiations are in progress for the erection of a grain storage elevator at Windsor, Ont., having a capacity of from one to two million bushels and costing approximately £170,000. The first unit completed would be of one million bushel capacity. A frontage of 1,300-ft. on the river is stated to have been secured.

The elevator would be used largely for the storage of Ontario corn (maize), the grain being dried in order to enable it to compete with corn imported from the United States and Argentina.

Notes from German Ports

Increased Cost of Construction of Nordschleuse and Kaiser Dock.

The Bremen Burgerschaft has voted a further sum of Rm.400,000 for the construction of the Nordschleuse and an additional Rm.215,000 for Kaiser Dock II. in Bremerhaven.

This payment for the Nordschleuse is mainly required for the cost of dredging the entrance to the Nordschleuse from the River Weser, the cost of which amounted to Rm.320,000. It was originally calculated that 1,900,000 cubic metres would have to be dredged; subsequently it was discovered that it would be necessary to increase this to 2,400,000 cubic metres.

The outstanding balance is for further costs in connection with the demolition of the old Brinkamerhof Port, and additional ramming work.

The extra Rm.215,000 required for the completion of Kaiser Dock II. is necessary partly as the result of a landslide which occurred while the extension was being carried out. This sum also represents payments for certain extra requirements demanded by the North German Lloyd, such as 16 bollards instead of 12, extra capstans, and the cost of pumping, which extended over eight months instead of four, as estimated.

Weser River Shipping in May, 1931.

Shipping conditions on the Upper Weser became very much worse during May. Up to the 13th the water level was sufficient for the full loading of smaller barges of 1.85 metre draft. Then followed a continual decrease of water until the 30th which, from the 26th, only permitted traffic with about 1 metre draft from Hanover-Munden. On the middle Weser conditions were similar. From the 20th, from Minden, unloading of barges coming from the canal had to be undertaken.

Due to the low water levels, the position of shipping has become more difficult than ever. Repeated petitions to the Reichs Traffic Ministry for reduction of the excessive tug wages and canal dues have not yet been granted. A further postponement can scarcely be supported by shipping.

In goods traffic 94,100 tons, against 92,600 tons in April and 147,100 tons in May of the previous year, passed through the Bremen Weser Lock downstream, and 34,500 tons against 24,400 tons and 30,600 tons respectively upstream. Several loads of English coal were shipped.

In the first five months of the year 598,700 tons were forwarded in both directions. That is 293,200 tons, or one-third, less than in the same period of 1930. Of this decrease, 248,000 tons fell to downstream traffic and 45,200 tons to upstream.

Notes from Far Eastern Ports

Ceylon.

Ceylon's Foreign Trade.

YET another depressing tale is told by the Customs Returns for May, just available. Both imports and exports of the Colony reached new low levels during the month, and the all-round downward trend, which was generally pronounced in the previous month, was continued. The value of imports amounted to Rs.17,591,391, approximately Rs.1,000,000 lower than the previous month, and exports fell by a similar figure, the value in May being Rs.18,659,713.

Duties on imports during the five months which ended on May 31st have all fallen considerably and were more than sufficient to counteract the small rises which have been shown under the heading of export duties. The total import duties were down by Rs.2,419,349 compared with the corresponding five months of 1930. The increased amount of export duties this year has resulted in an extra Rs.65,934 going into the coffers of the Customs House, but rubber duties during these five months have fallen to Rs.175,567. The economy which has been rigidly observed in the Colony since the depression began to be acutely felt, is reflected in the fall in duties collected from kerosene oil and motor spirits. During the first five months of this year the duties collected have decreased by Rs.575,335 compared with the corresponding period of last year. Spirits and cordials, too, are down by Rs.74,100 during these five months. Exports of tea to the United Kingdom in June amounted to 16,995,686 lbs. Foreign countries were Ceylon's customers to the extent of 24,573,922 lbs. Rubber exports from Ceylon to the United Kingdom totalled 2,307,962 lbs., and British possessions 176,557 lbs. Foreign countries took 9,971,520 lbs.

Colombo Port Commission.

At a very recent meeting of the Colombo Port Commission the draft estimates of revenue and expenditure of the Port Commission for the financial year, 1931 to 1932, as recommended by the Committee appointed for their consideration and printed, were considered.

Special Expenditure. Sub-head 28, Renewal of superstructure, etc., of coaling jetties, Rs.100,000.—The provision for this work was reduced to Rs.85,000. Sub-head 36, Electric installation for bungalows, Rs.6,500.—This Sub-head deleted, it being decided that this work should be met from the "Maintenance Votes" of this year and next.

With these amendments the estimates were approved.

The meeting also considered an application dated April 18th, 1931, from the Wharf Lighterage Company, Limited, for a special landing place at the Passenger Jetty for their launch. It was decided to inform the Company that every possible facility will be given for their launch, but that there is no room for the provision of further landing places at the Passenger Jetty.

The meeting also considered the question of levying a fee for resting the tanks of oil tankers for dangerous gas at the Port of Colombo:—(1) During ordinary working hours, Rs.75; and (2) Out of ordinary working hours, Rs.100, Rs.25 of which shall be payable to the Government Analyst in the case of testing carried out after ordinary hours.

Regarding floor of Passenger Jetty to facilitate handling of baggage trolleys, the following estimate (for the financial year 1930-31), having been circulated to members, was considered and approved:—Harbour Engineer's estimate No. 19a for Rs.1,775. Also the Harbour Engineer's estimate No. 19b for Rs.2,800, for erecting the two remaining luggage lifts and the spiral-staircase at the Baggage Office was considered at length and approved.

Limits of the Port of Colombo.

The limits of the Port of Colombo have recently been redefined for the purposes of the Master Attendants Ordinance, 1865, and the Pilot's Ordinance, 1899.

The Port now consists of the water area within the following limits:—To the north, a line drawn due west from a point on the beach one geographical mile north of Mutwal Point to a distance of three geographical miles; to the south, a line drawn due west from a point on the beach one geographical mile south of the Flagstaff to a distance of three geographical miles; to the west, a line connecting the western ends of the above-named north and south limits; to the east, the shore contained between the north and south limits, including the lake to Harbour Canal, Lock Basin, and Locks; and the water area of the Beira Lake, including the San Sebastian Canal Locks.

Bengal.

Calcutta's Foreign Trade.

The foreign trade of Calcutta in April, 1931, showed a further decline on the preceding month's account, the value receding from Rs.3.45 crores to Rs.3.34 crores.

Exports, however, advanced from Rs.4.03 crores to Rs.4.25 crores. Compared with the corresponding period of last year, both imports and exports declined, the value going down from Rs.5.81 to Rs.3.34 crores and from Rs.6.67 crores to Rs.4.25 crores, respectively.

A comparison of the value of the principal imports, with the figures for April, 1930, is given below, the figures in brackets representing the increase or the decrease as the case may be.

	In Lakhs of Rupees
Cotton Goods	61 (−121)
Machinery and Millwork	36 (−37)
Oils, mineral	27 (+4)
Iron and Steel	17 (−31)
Grain, pulse and flour	17 (+4)
Sugar	14 (−15)
Hardware	9 (−3)
Instruments, electrical	9 (−4)
Other Metals	8 (−5)
Liquors	6 (−3)

With the exception of mineral oils, grain, pulse and flour, all the principal commodities on the import side were affected by the general depression in trade. As usual, cotton goods suffered heavily. The total yardage of piece-goods shrank from 74 million to 24 million yards, and the value fell from Rs.1,60 lakhs to Rs.45 lakhs. Machinery and mill-work also fell from Rs.73 lakhs to Rs.36 lakhs. The quantity of refined sugar came down from 21,000 tons to 12,000 tons, and the value from Rs.26 lakhs to Rs.13 lakhs. The head "Grain, Pulse and Flour," includes 26,000 tons of wheat from Australia. Heavy imports of kerosene oil from Azarbaijan accounted for the rise in mineral oil. Liquors went down in value from Rs.9 lakhs to Rs.6 lakhs; tobacco, too, fell in value from Rs.8 lakhs to Rs.5 lakhs.

The variations in the value of the principal exports, as compared with the trade in April, 1930, are indicated below:—

	In Lakhs of Rupees
Jute, manufactured	169 (−169)
Jute, raw	71 (−51)
Hides and Skins	34 (−10)
Lac	26 (−13)
Grain, pulse and flour	17 (−8)
Iron, pig	11 (−10)
Tea	10 (−15)
Manganese Ore	4 (−4)

All the principal commodities on the export side declined in value. Jute, both raw and manufactured, suffered heavily. Most of the raw jute and tea went to the United Kingdom, and the bulk of gunny cloth, lac and skins to the United States of America, Java took the greater portion of gunny bags, Germany most of the hides and Belgium manganese ore. The bulk of pig iron went to Japan, and rice, which formed the bulk of the trade under the head "Grain, Pulse and Flour," went to the Netherlands.

Madras.

Cochin Shipping Dues.

On the representation of steamer agents, the Cochin Port Conservancy Board have decided to recommend to the Government that both landing and shipping charges at the port should be reduced to Rs.1 per ton.

In order to improve the service from Malabar Coast to U.S.A. ports, several steamer lines arranged to issue bills of landing at direct rates of freight for cargo shipped from all Malabar coast ports. In cases where a steamer of an American line did not call at any Malabar coast port, the cargo from that port would be transhipped at Cochin.

Under the existing rules cargo on transhipment is liable to pay landing and shipping fees separately. Steamer agents asked that special consideration should be given to cargo that had to be transhipped, with the result that the Government decided that in respect of cargo which was transhipped direct from one vessel to another only shipping dues would be levied, but when cargo was landed for transhipment both landing and shipping dues would have to be paid.

The steamer agents were not satisfied with this and said that if this decision were not reconsidered the development of Cochin as a port of transhipment would be retarded.

Notes from Far Eastern Ports—continued

Scheme for Bigger Cochin Harbour.

The proposed Conference in connection with the fourth stage of the Cochin Harbour scheme will be held in Madras in August. The Law Member to the Madras Government will preside and the Conference will be attended by the Finance Secretary to the Government, the Presidency Port Officer, the Harbour Chief Engineer to the Government, the Dewans of Cochin and Travancore and the Agent of the South Indian Railway.

It is now understood that there will be four conferences, the first of which will be attended by no less than fifteen delegates representing the three Governments, the Railway Board and commercial interests. The succeeding conferences will be attended by a smaller number of delegates, as the subjects to be discussed will be of minor importance.

According to the progress report for May, the dredger " Lord Willingdon " was engaged in dredging a channel 350-ft. wide and 32-ft. deep at low water on the Ernakulam side of the Venduruthi reclamation area and in pumping the spoil into the area south of the area that was reclaimed last year. The area reclaimed up to the end of May was 17.5 acres.

The hopper barges were dry-docked and repaired, and good progress was made in the construction of a new granite rubble wall for the Venduruthi reclamation. The experiments in connection with the fourth stage consisted of the sinking of trial shafts and driving of test piles and borings.

Port Conservancy Board.

Several important questions were discussed at the last meeting of the Cochin Port Conservancy Board. The Board recommended the transfer of Rs.3 lakhs from the Cochin Port Fund to the Cochin Landing and Shipping Fund, though the proposal had been negatived by the Government on the ground that it was preferable to keep the balances of the Port Fund intact so that the money might be readily available.

The Government of India had been addressed on the question of holding the opening of the bar at Cochin to be a through and permanent success and for the introduction from April 1st, 1931, of a division of Customs revenue as laid down in clause 8 of the " summary of points agreed upon by the Government of India, the Madras Government and Durbars of Travancore and Cochin for the development of Cochin Harbour." Pending the decision of the Government of India, it was urged that provision should be made in the Budget estimates of the Cochin Landing and Shipping Fund for 1931-32 for recovery from the Cochin Durbar of the further payment due for reclamation work.

Mr. J. S. Westerdale, Chief Engineer, Travancore, pointed out that the words " through and permanent " did not find a place in the original agreement, and that this matter had to be brought to the notice of the Government in connection of the division of customs revenue. Other Travancore members also supported this position.

Rao Saheb T. V. Kasturi Renga Iyer, Diwan Pashkar of Cochin State, said that the Board had no right to pass such a resolution, and added that the Cochin Durbar had several important matters to be pressed for consideration as regards the division of Customs revenue. The two words, in his opinion, were essential. A heated debate followed and eventually the Board accepted the position put forward by the Travancore members.

Chittagong Port and a Capitation Tax.

At a recent meeting the Commissioners of the Chittagong Port Trust adopted a resolution that in view of the present financial position of this port the Government of India be asked to approve of the Port Trust's suggestion for the levy of a capitation tax of a rupee per head on passengers arriving at or embarking from Chittagong by sea.

The Committee of the Port Trust have at present recommended by a majority a levy of one rupee per head on first and second class, and eight annas per head on deck passengers embarking from Chittagong for ports outside Bengal.

Local agents of shipping companies view this suggestion of a capitation tax with disfavour. The passenger community, whom it is proposed to tax, being poor, is in general resenting this measure. The Executive Committee of the Chittagong Association, at an extraordinary meeting, recorded its protest against levy of the capitation tax in the present economic crisis in the country.

Miscellaneous

The Karachi Port Trust, in considering various schemes for utilising last year's surplus of Rs.186,000, have accepted the proposal for a 50 per cent. reduction in the surcharge on wharfage on kerosene oil, on the condition that the oil companies made a corresponding cut in the selling price.

Lloyd's Register Shipbuilding Returns for the Quarter ended 30th June, 1931

FROM the statistics issued by " Lloyd's Register of Shipping " regarding vessels under construction at the end of June, in Great Britain and Ireland there is a decrease of 128,211 tons in the work in hand as compared with the figures for last March, and the present total —555,603 tons—is 836,460 tons less than the tonnage which was being built at the end of June, 1930. Moreover, the figure for June, 1931, is lower than at any quarter since December, 1887, and includes nearly 68,000 tons on which work has been suspended.

Nearly 82,000 tons of the tonnage now in hand in this country are intended for Norway, and about 86,500 tons for other countries abroad or for sale.

The tonnage now under construction abroad—1,270,384 tons is about 36,000 tons less than the work which was in hand at the end of March, 1931.

Six countries abroad have more than 100,000 tons under construction, viz.:—United States of America, 301,489 tons; France, 211,940 tons; Italy, 170,658 tons; Germany, 130,651 tons; Sweden, 110,355 tons; and Holland 108,299 tons.

The total tonnage under construction in the world amounts to 1,825,987 tons, of which 30.4 per cent. is being built in Great Britain and Ireland, and 69.6 per cent. abroad. The average percentages in the last twelve months before the war were 57.2 for Great Britain and Ireland and 42.8 for abroad.

In Great Britain and Ireland, only 23,359 tons were commenced during the last three months—a decline of 9,326 tons from the corresponding figures for the March quarter. For the purpose of comparison during the six months ended March, 1930, the monthly average of tonnage commenced was over 154,000 tons. During the second quarter of 1931, 170,100 tons were launched—an increase of about 25,000 tons as compared with the quarter ended 31st March last. Similar figures for abroad are 211,079 tons commenced, and 302,050 tons launched, showing increases, as compared with the previous quarter, of 1,896 and 50,197 tons respectively.

The oil tankers under construction in the world amount to 77 vessels of 627,810 tons, of which 28 vessels of 243,315 tons are being built in Great Britain and Ireland, 11 vessels of 85,100 tons in Sweden, and 9 of 82,090 tons in Germany. Of the 77 tankers under construction, 67 are motorships.

The tanker tonnage now in hand represents over 34 per cent. of the total steam and motor tonnage being built in the world.

During the first three quarters of 1930, the tonnage of motorships under construction in Great Britain and Ireland exceeded that of steamers being built, but at the end of December, steamers again exceeded motor ships by 23,740 tons. At the end of March, 1931, the steam tonnage building (395,352 tons) was 100,000 tons more than the motor tonnage, while at the 30th June last, the steam tonnage being built in Great Britain and Ireland exceeded that of the motorships by 126,301 tons. The motorship tonnage being constructed abroad (657,304 tons), is 47,805 tons greater than that of the steamers.

Of the vessels being built in the world at the end of June, there are 4 steamers of between 8,000 and 10,000 tons, and 7 of between 10,000 and 15,000 tons, while the motor ships amount to 29 and 14 respectively. Of the larger vessels, i.e., those of 15,000 tons and upwards, however, 12 are steamers of between 15,000 and 30,000 tons, and 7 are steamers of 30,000 tons and upwards, while there are only 4 motorships in the former division, and none in the latter.

The table respecting marine engines shows that the horse-power of steam engines now being built or being fitted on board amounts to about 1,182,000 horse-power, while the figures for oil engines aggregate about 797,000 horse-power. The figures for steam engines include 50 sets of turbine engines of about 1,037,000 shaft horse-power, giving an average of 20,736 horse-power per set. The horse-power of the steam reciprocating engines (145,065 horse-power) is less than 7.5 per cent. of the total h.p. of marine engines now building in the world.

Tonnage to Lloyd's Register Class.—The pre-eminent position of Lloyd's Register among the Classification Societies of the world is clearly indicated by the fact that, notwithstanding the great reduction which has taken place in the amount of work in hand, the tonnage actually in course of construction throughout the world under the inspection of Lloyd's Register reaches 1,130,504 tons; of this total, 540,015 tons are in Great Britain and Ireland, representing more than 97 per cent. of the total tonnage now being built there.

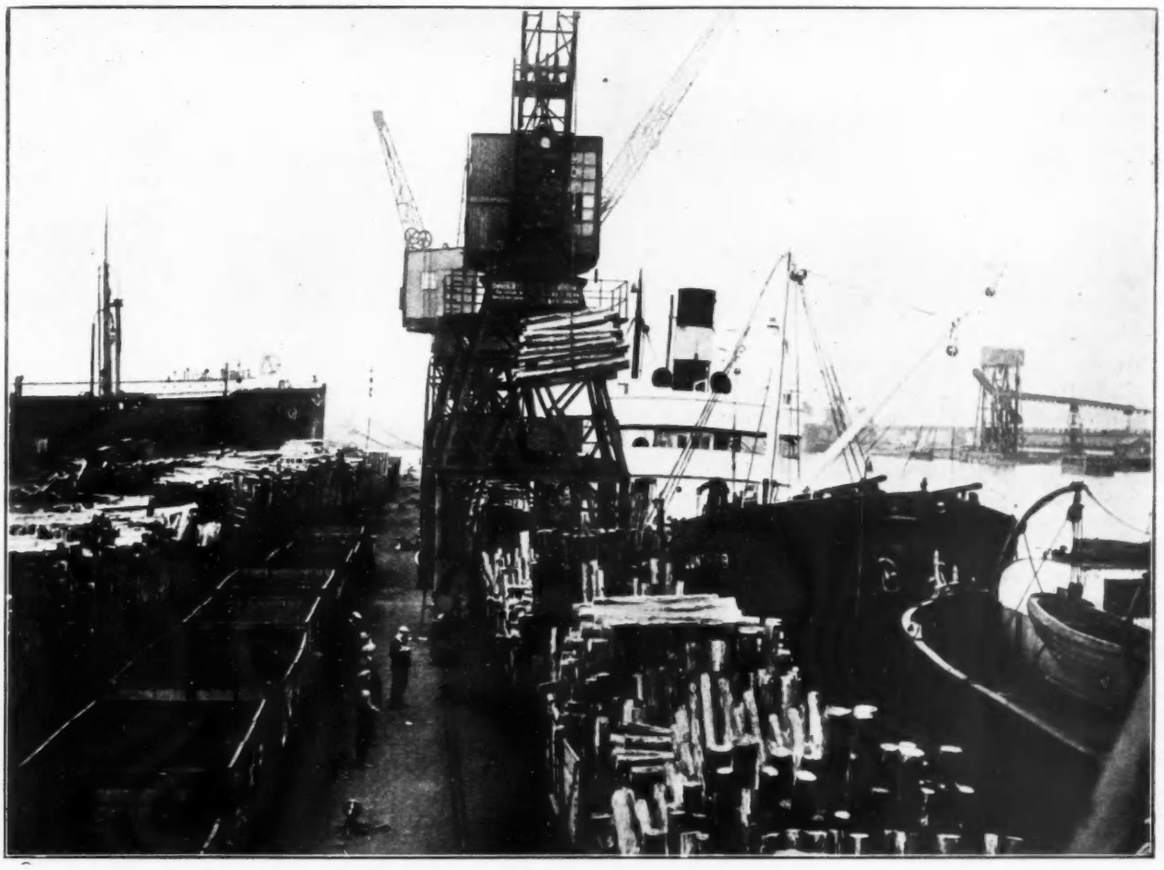
Hull and the Humber

The Humber Bridge Bill.

THE highly contentious Humber Bridge Bill has now passed its third reading in the House of Commons and goes forward to the House of Lords. The decision of the Select Committee of the Lower House, presided over by Mr. Raynes (Derby) came as a great surprise to the Humber Conservancy and others in opposition, who when the preamble was declared approved withdrew and declined to enter upon discussion of protective clauses suggested by the Committee. A great deal was heard during the hearing about the construction of training walls in the river Humber to divert the flow, and when the Bill was before the House for second reading an amendment was moved by Mr. Tom Smith (Pontefract) to insert a clause providing that the bridge and other works authorised should not be commenced until a local Act were passed authorising the construction of suitable training walls for the protection of the navigation of the river Humber and containing a provision requiring such training walls to be constructed simultaneously with the construction of the bridge. This, however, was withdrawn and the Bill for the bridge stands by itself without any reference to training walls which would have had the effect of holding up the construction of the bridge indefinitely. The Humber Conservancy Board alone are the authority for the navigation of the river and it is within their province to build whatever training walls may be necessary, bridge or no bridge.

A scheme, as stated in a previous issue, is already in existence, but the present-day cost is prohibitive, and the Conservancy are without adequate funds to proceed with it unless they increase the dues on shipping or receive financial support from other sources. There appears to be some likelihood of money being forthcoming from the Government, for it is to be noted that in the House of Commons the Minister of Transport, while declining to accede to a suggestion of a grant from the Road Fund, stated that if the bodies concerned with the navigation of the Humber got together and arrived at an agreed scheme for training walls, and it was submitted to the appropriate committee (presumably the Unemployed Grants Committee) for State assistance in a way which would be proper under the Development Act, he and the President of the Board of Trade would give the matter fair and proper consideration with a view to seeing whether it would be possible to make a grant for training walls as an unemployment scheme.

The Humber Conservancy, however, at their last meeting, and before this proposal was put forward by the Minister of Transport, had decided to pursue their opposition to the Bill in the House of Lords, where Commissioners and their advisers consider they have a good chance of defeating the Bill, which they decline to accept at any price in view of the very serious danger the Bridge would constitute to the navigable channel of the river and shipping using the upper reaches in the direction of Goole.



Discharging Pit Props, King George Dock, Hull.

Construction of the New Fish Dock at Hull.

Such good progress has been made with the construction of the new Billingsgate at the St. Andrew's Dock, Hull, that it is confidently expected that it will be completed by the end of August and in the occupation of the steam trawler owners, merchants and others early in September. The new structure is to take the place of the market which was destroyed by fire eighteen months ago and within a few weeks of its being finished, and special precautions have been taken—already outlined in *The Dock and Harbour Authority*—to prevent a repetition of that disaster. The new quay or market is 1,440-ft. long and 90-ft. wide and contains 168 office boxes and fish storage caves, in addition to which a fine block of offices, etc., is being built. The ground floor of the latter on the East side is being reserved for the London and North-Eastern Railway Company's staff, about sixty of whom are at present making the best of the very limited accommodation on the Dock Road, while on the Western side the postal and telegraphic staff will be housed. Further accommodation for the L. and N.E.R. staff is provided on the first floor, where they will be joined by the Hull Fish Merchants' Club. All of the second floor has been allocated to trawler owners and merchants, for whom 62 offices are reserved. As soon as the new quay and the new offices are completed, a partial reconstruction of the old Billingsgate, now in use by the fishing industry, will be undertaken. The old quay is 1,730-ft. long and 60-ft. wide and will be widened to 90-ft. To accomplish this, part of the existing road will be taken in and old offices demolished to make room for a new thoroughfare. The total cost to the London and North-Eastern Railway Company, the owners of the docks, will not be far short of £200,000. The work will constitute a very valuable improvement and greatly facilitate the operations of the fishing industry, which have extended very considerably of late years.

Jugoslavian and Near Eastern Port Matters.

ACCORDING to statistics which have just been published, the following is a schedule of shipping at Greek ports during 1930:

	No.	Net Tonnage	GOODS Imported Tons	GOODS Exported Tons
Pireaus ...	7,835	6,759,158	1,616,052	427,516
Patrass ...	3,154	1,967,735	142,304	82,524
Salonica ...	1,612	1,615,711	565,221	152,209
Volos	1,737	1,063,397	193,946	123,561
Syra	1,465	1,002,676	37,338	13,095
Corfu	1,049	868,561	42,073	23,426
Chios	996	665,068	57,399	16,362
Candia ...	804	613,183	64,463	50,621
Mytilene ...	825	536,179	43,549	14,210
Chalchis ...	1,018	425,327	101,599	52,867
Cavalla ...	718	415,055	60,208	39,788
Calamata ...	497	403,562	117,297	73,444
Canee ...	534	371,903	39,452	17,379
Andros ...	254	348,529	12,528	815
Wathy (Samos)	343	325,497	16,785	8,613
Zante ...	532	270,449	15,077	19,718
Alexandropolis	430	248,377	43,056	22,643
Prevesa ...	941	244,714	24,107	142,153
Rethymon ...	412	234,568	20,613	16,077
Kéa	158	201 575	22,143	5,885
Laurium ...	424	196,068	17,131	24,603
Ydra	929	170,570	591	30
Argostoli ...	282	153,890	8,362	4,430
Lymnos ...	312	122,759	7,201	3,402
Spetsa ...	419	89,894	6,024	1,135
Ithaki	240	57,926	1,703	210
1930	27,920	19,373,331	3,476,022	1,336,746
1929	28,150	18,506,587	3,678,701	1,654,825

It will be seen that shipping has shown a decrease at Greek ports, notwithstanding that the tonnage of ships arrived and cleared has shown an increase due, particularly, to the devlopment of the passenger trade. Of the goods unloaded, 2,441,330 tons arrived from foreign ports and 1,034,692 tons arrived from home ports, and of the goods loaded, 484,187 tons have been shipped to foreign ports and 852,539 tons to Greek ports.

In connection with the participation of the various countries in Greek shipping it is interesting to consider the following:

	1930 No.	1930 Net Tonnage	1929 No.	1929 Net Tonnage
Greek	22,557	10,030,399	21,764	8,841,425
British	918	1,793,001	1,013	1,899,286
Italian	2,137	4,289,524	2,307	4,353,237
German	420	681,213	513	717,261
French	170	516,037	183	551,880
American ...	172	486,476	149	436,452
Jugoslav ...	535	379,800	599	432,424
Dutch	229	303,423	316	443,375
Norwegian ...	157	215,944	146	179,510
Turkish	121	142,199	184	168,901
Swedish	103	120,084	90	107,986
Roumanian ...	97	115,528	83	102,774
Russian	84	103,069	95	131,994
Bulgarian ...	115	82,207	163	173,201
Other Countries ...	105	114,427	119	160,893

The largest increase has been shown by Greece, and this fact, if coupled with the increasing idle tonnage laid up at Greek ports during 1930, clearly shows that the position as shown by the above figures cannot be taken as a basis for judgment in connection with the actual position of the various flags in the Greek shipping. There is no doubt that the increase of American tonnage is a factor which must be taken into account when examining the situation of Near Eastern trade, as well as the fact that the French steamship companies are uninterruptedly increasing new tonnage on this route.

Commendatore Coen Cagli has arrived at Athens, and has conferred with the leading Greek authorities interested in the development of the ports. A meeting has been held at the Office of the Organismos Limenos Pireos to which the whole shipping community of Pireaus has taken part. Commendatore Coen Cagli has suggested that the "Port d'Alon" should also be used for shipping, and has shown his opposition to the idea of providing the port of Pireaus with floating piers in order to facilitate the development of the liner trade. The advices of Comm. Cagli have been fully approved by the meeting, and it is expected that the new organisation of the port of Pireaus is to be put into effect in the course of the next few weeks.

M. Canonge, General Manager of the Société Anonyme des Docks, Quais et Entrepôts du port de Istambul, operating the Galata quays, has arrived at Istambul accompanied by the Technical Adviser of the Suez Canal Company who has come to Istambul to study the problem of the port. The Société des Docks, etc., has undertaken—according to the last messages from Istambul—to carry out certain harbour improvements and enlargements to the value of £800,000, and the Technical Adviser of the Suez Canal Company is to be requested to prepare the projects respecting these works.

In connection with the position of trade in the port of Istambul it may be interesting to note that shipping during the month of April included the following countries:

	No.	N.R.T.
Italian	159	397,769
British	110	275,558
Greek	144	263,372
Norwegian	47	156,899
Turkish	132	124,987
French	37	118,110
Russian	34	62,289
German	29	62,096
Dutch	29	57,350

It appeared that the Turkish Seyrisefain would have created a new service from Istambul to Marseilles, but they have given up the idea in view of the depression in trade. It may be interesting to consider the following statistics regarding the trade carried on by the fleet of the Seyrisefain (Turkish State Mercantile Marine):

Year	No. of ships	Tonnage	Passengers Carried	Freight carried	(Turkish lira) Receipts
1923	34	26,630	9,859,070	53,869	2,333,574
1924	44	44,975	10,066,221	68,857	2,981,122
1925	45	45,531	10,276,979	96,931	3,147,905
1926	49	53,533	11,208,404	123,815	3,486,135
1927	52	63,230	11,694,796	143,721	4,379,580
1928	52	63,230	11,620,386	141,087	4,233,166
1929	52	63,230	11,574,477	137,871	4,394,975

It can be seen that despite the heavy competition which is going on in international shipping, the Turkish Seyrisefain has suceeded in obtaining an important share of Levant trade.

Shipping at Jugoslav ports is showing an increasing tendency as is shown by the fact that the total arrivals and clearances at and from Jugoslav ports totalled 96,120 ships and 15,290,000 gross tons in 1930 against 91,913 ships and 14,940,000 gross tons in 1929, 84,980 ships and 14,400,000 gross tons in 1928, 70,984 ships and 11,820,000 gross tons in 1927, 69,772 ships and 10,220,000 gross tons in 1926 and 62,461 ships and 9,470,000 gross tons in 1925. Shipping at Jugoslav ports has thus shown an increase of about 5,000,000 gross tons in the past five years.

Port of London Authority

London's Shipping.

During the week ended July 10th, 1,175 vessels, representing 1,035,131 net register tons, used the Port of London. 609 vessels (853,458 net register tons) were to and from Colonial and Foreign Ports, and 566 vessels (181,673 net register tons) were engaged in coastwise traffic.

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During the week ended July 17th, 1,056 vessels, representing 946,418 net register tons, used the Port of London. 541 vessels (754,038 net register tons) were to and from Colonial and Foreign Ports, and 515 vessels (192,380 net register tons) were engaged in coastwise traffic.

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During the week ended July 24th, 930 vessels representing 912,095 net register tons, used the Port of London. 569 vessels (755,267 net register tons) were to and from Colonial and Foreign Ports, and 361 vessels (156,828 net register tons) were engaged in coastwise traffic.

World's Record Coal Discharge.

A world's record for the discharge of coal has just been set up in the Port of London by the collier " Corbridge " (Wm. Cory and Sons, Ltd.). She came alongside the Albert Dock Hoists at 12.45 p.m. and by 2.15 p.m. had completely discharged her cargo of 2,287 tons of coal.

Proposed Acquisition of Hay's Wharf.

The Port of London Authority announce that they have resolved to promote a Bill in the next session of Parliament to acquire the undertaking of the proprietors of Hay's Wharf, Ltd., whose principal properties lie between London and Tower Bridges on the south side of the river.

New Season's Tea.

A record discharge in King George V. Dock last month of new season's tea from China ex the P. and O. liner " Burdwan," revives memories of the arrival at Blackwall of the famous tea clipper sailing ships of the middle nineteenth century.

Out of 3,000 packages discharged after the s.s. " Burdwan " broke bulk at 8 a.m. on a Monday, delivery of nearly 2,000 packages was effected to the Port of London Authority's main tea depot at Commercial Road during the day, and the tea was available for merchants' inspection and sale within a few hours.

Irish Harbour Matters

Limerick.

Limerick Harbour Board: Navigation of the Shannon.

A LETTER from the Free State Ministry of Industry and Commerce to the Limerick Harbour Board states that the application of the Board for approval to a loan of £100,000 for the construction of additional dock accommodation and the construction of a railway connecting the port with the Great Southern Railway termius in the city has been placed before the Ministry of Finance. There is reason to believe that the loan will be approved.

The Board has agreed to make a contribution of five guineas towards the upkeep of the Irish Nautical College and Training School, Dublin.

At a previous meeting of the Limerick Harbour Board, a letter was read from the Ministry of Industry and Commerce stating that, in view of the high summer load on the Shannon power station, due to increased demand for electricity, it might be necessary for the Electrical Supply Board, should an abnormally dry period be experienced in the summer, to lower considerably the levels in the upper part of the Shannon, and consequently to restrict navigation for a limited period. Due notice would be given should this course become necessary, and navigation interests would be informed as to the degree of interference which vessels would experience.

Mr. Treacy stated that navigation between Limerick and Killaloe was still closed, though privately-owned boats had gone through.

Arising out of this letter and in reply to a question from the Board, the Ministry of Industry and Commerce stated it would not be necessary this year to lower the levels of the Shannon navigation north of Athlone. When it was found necessary to do so, due consideration would be given to the interests involved.

Limerick Dock.

Dublin.

Dublin Port and Docks Board: Chairman's Visit to Belfast.

Referring to his recent visit to Belfast as a member of a delegation from the Irish Free State ports, Mr. C. E. McGloughlin, Chairman of the Dublin Port and Docks Board, acknowledged the great courtesy with which they were received, and the wonderful entertainment which was given them during their stay. It was, he said, a great inspiration to go round Belfast port and see the work that was being done there. What particularly struck him was the new deep water channel on which something like a million pounds was being spent. It was gratifying to see this at a time when Belfast was suffering, perhaps, more than most cities of the Empire. It showed great enterprise and, in his opinion the right frame of mind on the part of the Belfast Board.

It was estimated that in about fifty years hence, Belfast might make a profit by it. That, however, was what was wanted at the moment.

Mr. McGloughlin also referred to Belfast's new waterworks undertaking which he found very interesting. The constructors had to go down 240-ft. to get to the bottom of the loose and open rock, and build up from that. In Belfast at present there was no proper waterworks; the water was not filtered, it was merely strained; but the new works would be on the lines of Dublin waterworks.

Dundalk.

New Quays Opened at Dundalk.

Mr. Wm. Cosgrave, President of the Executive Council, Irish Free State, opened the new quays at Dundalk on the 22nd June.

The total length of the new quays is 1600-ft. This provides a new berthage of 300-ft. Three-quarters of the work has been completed and the remaining portion will be completed as soon as funds are available. Before 1925 all the quays, cranes and other facilities were privately owned, but since the Act of 1925 was passed by the Oireachtas, all these have been acquired by the Dundalk Harbour Commissioners, who have made many improvements.

At a luncheon afterwards, Mr. Wm. Twybill welcomed the President and Mr. McGilligan, Minister for Industry and Commerce, and expressed the hope that the work which had been done with the £35,000 guaranteed by the State would contribute to the success of Dundalk and the Irish Free State.

Mr. Cosgrave said that what had been done by Dundalk was a headline for the rest of Ireland. They had set about their extension of their docks in a manner that reflected the greatest credit on everyone concerned.

Mr. P. McGilligan, Ministry for Industry and Commerce, said there was relative prosperity in the Free State. They had seen in Dundalk something which they wanted to see everywhere in the Free State. They had seen people trying to

Irish Harbour Matters—continued.

help themselves. They had a good Board of Harbour Commissioners, and with regard to the loan there was no object more worthy of assistance from the Trade Loans Guarantee Act than a public utility of this kind.

Mr. David Barry, O.B.E., Dublin, said that on his advice the B. and I. Line (his company) had invested capital in the purchase of the Dundalk and Lewry Steam Packet Co., and he wished the Port of Dundalk every success. Since he came in contact with the Dundalk Harbour Board in 1927, he had found that they were always actuated by the interests of the port.

Belfast.

The Event of the Month at Belfast.

The outstanding event in the port of Belfast during the past month was the visit, as guests of the Belfast Harbour Commissioners, of representatives of the other leading ports in Ireland. Following their arrival the visitors made a tour of inspection of the harbour estate and all expressed themselves deeply impressed with what they saw.

In the evening the visitors were entertained to dinner in the beautiful Harbour Office, Mr. R. E. Herdman, Chairman, presiding.

The Chairman, proposing the toast of " The Harbour Commissioners of Cork," made interesting references to the development of the port of Belfast. He said that up to 1848 only small vessels could enter the port, in fact at the beginning of last century the estuary used to be known as "Carrickfergus Bay," the name being afterwards changed to Belfast Lough as the port developed. In 1848 the tonnage of the port was a little over 500,000 tons and the revenue a little over £23,000, while to-day the tonnage approached 4,000,000, and the revenue was well over £3,000,000. Within the past two years they had commenced the forming of a new channel at an outlay of about £4,000,000. On the work upwards of 500 men were employed and that would continue for a couple of years.

Proceeding, Mr. Herdman said it was a pleasure to him and his colleagues to welcome their friends from Cork and the other ports. There were in that room many who held different views and it augured well for the future happiness of their country that they could meet in friendship and amity, and yet not depart in any way from their beliefs and ideals, which were individually dear to their hearts.

Mr. Richard Wallace, Chairman of the Cork Harbour Commissioners, after returning thanks for the generous and kindly hospitality extended to them, said they had been educated and instructed by their visit and the intercourse and exchange of views would be for the benefit of all parts of the country. After all, they were one big family. Referring to the scheme of dock development in Belfast, Mr. Wallace said they needed more of that optimistic outlook.

His Honour the Recorder of Belfast, proposing the toast of " The other Irish Port Authorities," said these included Coleraine, Derry, Dublin, Galway, Limerick and Waterford. The Belfast Harbour Commissioners, added his Honour, had made a magnificent success of their harbour and the citizens of Belfast had the greatest confidence that the Commissioners would continue to do the same in the future, while there were present representatives of other ports who had done splendid work for their own harbours.

Mr. Charles E. McGloughlin, Chairman of the Dublin Port and Docks Board, responding, said he did not know Belfast very well, but he could say that coming there that day had been an inspiration to anyone who took an interest in the welfare of the country. In these depressed times, when most people were seeing where they could economise, the Belfast Harbour Commissioners were pushing on with a scheme which might seem visionary, but of which they would reap the benefit in the future. Although not so much in the limelight Dublin and the other ports were doing what they could for the benefit and improvement of their harbours and that spirit was spreading in the country at the present time. The Belfast Harbour Commissioners were spending money for which they would not get any return for many years. " We," said Mr. McGloughlin, " want more of that spirit and courage in Ireland. We have a lot of it, but we want more of it at the present. The other ports might be forgotten with the glamour surrounding Belfast and Cork, but we are all carrying on a good work."

Mr. Robert H. Smyth, Chairman of the Londonderry Port and Harbour Commissioners, said he had his eyes opened that day, when he inspected the Belfast Harbour. It was marvellous to him the progressive way the Belfast Commissioners were spending money in the hope of better times. Proposals had been put before him in Derry and he had only accepted the smaller ones, but he felt after his visit to Belfast that he had been educated.

The following day the visitors went to the Silent Valley, Co. Down, where they inspected the work of the scheme for an improved water supply for Belfast. The scheme is being carried out by the Belfast Water Commissioners, at a cost of £1,500,000. The magnitude of the operations deeply impressed the visitors.

Returning to Belfast, the visitors were entertained to dinner in the Grand Central Hotel. Mr. R. E. Herdman, who again presided, proposed the only toast, " The Lord Mayor of Cork " (Councillor F. J. Daly).

Mr. Daly, returning thanks, said they had all been greatly impressed by the magnificence of the port of Belfast, the vast development of which was a true representation of the love that the people of Belfast had for Ireland.

Mr. J. O'Neill (Coleraine) and Mr. J. V. A. Spence (Waterford) joined in the expression of thanks, paying tribute to the courtesy and excellent arrangements made for the comfort of the guests by Mr. M. J. Watkins, the General Manager, Mr. W. Chamberlain, and other officials of the Belfast Harbour Board.

Meeting of the Belfast Harbour Board.

At the meeting of the Belfast Harbour Board on the 7th July, striking letters of thanks were read by Mr. Watkins from Mr. Eugene Gayer, Mr. Richard Wallace, Mr. F. J. Daly (Lord Mayor of Cork) and Mr. Austin Farrell (Secretary of the Waterford Harbour Board). The communications showed conclusively that the visitors thoroughly appreciated the hospitality shown to them, from the moment they arrived in Belfast until they left for home, and that they went back with a grand idea of Belfast and its people.

Mr. Herdman said he was sure they were all agreed that if the visit of their friends gave them as much pleasure as it did to him and the other members of the Belfast Board, they felt well rewarded for any little trouble that was taken in the matter.

Report of the Harbour Master.

The report of the Harbour Master, presented at the meeting on the 7th July, showed that 472 vessels arrived at the port during the period extending from 14th June to the 4th July, made up as follows:—Coastwise and cross-channel 424; foreign 27; non-trading 21.

The total tonnage of the vessels which arrived at the port from the 1st January to the 4th July was:—Coastwise and cross-channel 1,393,406, an increase of 35,252 over the corresponding period of last year; foreign 360,695, an increase of 33,392; non-trading 40,369, a decrease of 28,335—total, 1,794,470, an increase of 40,309.

London's Docks Spread to the Midlands

The docks of London are spreading into the Midlands. This is the result of the efforts of Britain's industries to reduce production costs to the level of those of competing countries.

Every day sees a revival in the utility and efficiency of England's waterways to meet the manufacturer's demand for cheaper, yet speedy, transport, and this movement is being accompanied by the construction of private docks all along the great trunk canals, such as the Grand Union system, which links the Midlands with the sea, via the Thames and the Trent.

" The docks are usually constructed on the manufacturer's own premises," said an official of the Grand Union Canal Company in an interview recently, " and are so placed that distribution of goods to any part of the factory is an easy matter. Many of the larger firms have acquired their own barges, which are loaded overside from steamers arriving in the Thames with cargoes from all parts of the world, and are speedily loaded or discharged with the aid of overhead electric conveyors, on arrival at the private docks.

" The largest users of the canals are, as might be expected, those who deal in heavy goods, such as coal, timber, building stone, road materials and machinery, but of late there has been a tendency on the part of the lighter trades to make use of inland waterway transport. Two of the largest manufacturers of foodstuffs in the country, for example, are among those which have built themselves canal-side factories on the western edge of London, and make use of the Grand Union system for the distribution of their manufactures to the Midlands and the North."

Notes from the North

Morpeth Dock Improvements.

CONSIDERABLE improvements have been effected by the Great Western Railway Company at Morpeth Dock, Birkenhead. The reconstruction of the Company's goods station practically doubles the accommodation available. The whole of the layout of the sidings and waterside premises has been completed and only the offices, goods shed and warehouse remains to be completed. In connection with the waterside arrangements it is worthy of mention that where imported traffic is dealt with direct into barge at Liverpool, there is a saving of 90 per cent. in master porterage. The Company's new accommodation at Morpeth Dock enables it to deal with such traffic in the most expeditious and economical manner, as every facility in regard to electrical appliances have been provided. In the goods yard, everything possible has been done to reduce shunting to the lowest possible limits, and to this end, mobile cranes are installed together with a gantry crane capable of dealing with heavy lifts up to 30 tons.

New Dock Gate Machinery.

Mersey Docks and Harbour Board recently invited tenders for dock machinery, etc., required at Liverpool Docks and has accepted the one submitted by the Hydraulic Engineering Co., Ltd., of Chester. Messrs. Vickers Armstrong, of Barrow-in-Furness, successfully tendered for the hand sluice machinery.

Elevators for Nitrate of Soda.

Experiments have recently been made in the Port of Liverpool in cheapening the cost of handling of granulated nitrate of soda. Hitherto the use of elevators has been confined to grain cargoes, but now with increasing quantities of nitrate coming forward in granulated form it seems they may be readily and successfully adapted to deal with this class of cargo. A short time ago, a consignment of 500 tons of nitrate was lifted from the ship's hold by means of a powerful elevator and as a result of the innovations, a considerable saving in both time and money was effected.

Contract for Tunnel Ventilating Plant.

Messrs. Walker Bros. (Wigan), Ltd., Pagefield Works, Wigan, have obtained the contract for the ventilating plant of the new Mersey Tunnel. This plant will be the largest of its kind in the world and will consist of sixteen of the largest type "Indestructible Fans," which are standard colliery ventilation fans and similar to those which have been installed in collieries not only in this country but all over the world. This contract will provide continuous work in that department for at least nine months. There is a significant coincidence in the securing of this contract when it is recalled that the founders of the firm of Walker Bros., Mr. J. S. Walker and Mr. T. A. Walker successfully contracted for, and installed, the ventilating plant for the old Mersey Tunnel when it was constructed about 50 years ago, and on the completion of this installation the two gentlemen named were presented to the late King Edward VII. (when he was Prince of Wales), who opened the tunnel.

Aerial View of Deep-water Docks at Manchester. At the head of No. 9 (the largest) Dock stands No. 2 Grain Elevator, while No. 1 Grain Elevator stands opposite the Entrance to this Dock. Mode Wheel Locks are shown at the bottom left-hand corner and the Dry Docks are in the foreground.

Mersey Tunnel to Open Next Year.

It is expected that the Mersey Tunnel will be ready for opening in September of next year. The Mersey Tunnel Joint Committee hopes it may be possible for the King to perform the opening ceremony. Nearly 99 per cent. of the construction of the 44-ft. diameter iron-lined tunnel between the shafts at St. George's Dock, Liverpool, and Morpeth Dock, Birkenhead, has been completed. The value of the work accomplished approximates £1,413,000 of the contract work amounting to £1,413,601. Excavations amount to 257,000 cubic yards, or 99 per cent. of the total of 260,000. On this particular contract, 60 men are employed. The construction of the full-sized tunnels on the Birkenhead side has advanced to 96 per cent., valued at £719,000. More than 96 per cent., or 11,000 cubic yards, of concrete, have been placed in the roadway, on the Birkenhead side, the number of men employed being about 150. On the Liverpool side, out of a contract amount of £670,380, work valued at £609,000 or 91 per cent. of the total, is complete, and also 96 per cent. of the concrete placed in the roadway, while 200 men are employed. Out of a total of £86,000 for connections for ventilation, £47,000 has been spent. The total number of men employed is 810.

Notes from the North—continued

Nearly 40,000,000 Tons of Shipping.

In the annual statistics issued on July 9th by the Mersey Docks and Harbour Board, it is stated that the approximate weight of goods for the year ending June 30th, 1931, on which dues were paid, is estimated at 13,428,000 tons. In the year there was a substantial decline in the tonnage entering the port, and also in the receipts for the year. While there was a decrease in the number of coastwise vessels paying dock tonnage rates, there was an increase in the tonnage, this being the only increase recorded in any class of vessel during 1931. Dealing with vessels paying dock tonnage rates, the number was 3,687 vessels of 12,544,439 tons, foreign (a decrease of 1,118,505 tons), and 9,020 vessels of 2,578,125 tons, coastwise (increase 56,554 tons). Paying harbour rates were: 1,674 vessels of 3,233,204 tons, foreign (a decrease of 385,754 tons), and 5,350 vessels of 1,487,460 tons, coastwise (a decrease of 23,887 tons). In all there entered the port during the year, 19,731 vessels (decrease 1,040 vessels) of 19,843,228 tons, showing a decrease of 1,471,592 tons compared with the previous year's figures.

The receipts are from the rates received on vessels and the rates and dues received on goods. The rates received on vessels include dock tonnage rates, foreign £1,305,809 (decrease £155,473), coastwise £80,138 (increase £2,082); harbour rates only foreign £46,574 (decrease £5,315); coastwise £7,736 (decrease £19); graving dock and gridiron rates, £38,125 (decrease £16,554); dock rent, £25,119 (increase £13,067); total rates on vessels, £1,503,504 (decrease £162,212); rates and dues received on goods: dock rates—foreign, inwards, £458,508 (decrease £48,582), outwards, £78,497 (decrease £41,784); coastwise, inwards, £65 (decrease £3); town dues—foreign, inwards, £312,701 (decrease £33,116), outward, £83,912 (decrease £44,138); coastwise, inwards, £22,548 (increase £268). The total amount received in rates and dues on goods was £956,233, a decrease of £167,999, and the grand total of rates on vessels and goods was £2,459,738, a decrease on the total for the previous year of £330,212. Included in these figures are the receipts on Conservancy account, totalling £246,962, a decrease of £19,770. The following notes are appended to this statement:

The reduction of 5 per cent. in the foreign dock tonnage and wharf rates on vessels was discontinued from September 1st, 1928, until January 1st, 1930, when it was restored.

The tonnage shown above represents the total net register tonnage of vessels paying rates to the Board, inwards or outwards, as the case may be. To arrive at the total tonnage which entered and the total tonnage which left, the River Mersey it is necessary to double the figures. The approximate total tonnage, inwards and outwards, for the year just ended, would therefore be 39,686,456 tons.

Shap Granite for Southampton Docks.

The Shap Granite Company have secured the contract for the supply of granite for the big dock which is to be constructed at Southampton to accommodate the world's biggest liners. The granite will be from the " pink " quarry, which is situated at the top of Shap Fells some 1,600-ft. above the sea level. Much of the granite is for the dock gates, and will have to be finely dressed, some of it to a six-hundredth of an inch. Generally, this finishing is done on the site of the construction, but preparations are being made for this skilled work to be done at Shap. The company is installing new plant to cope with the contract, and extra accommodation for between 40 and 50 men above the normal number, is being prepared. Shap granite has already been used in the construction of many well-known docks, including Albert Dock, Hull, and Heysham. It has also been used on the Thames Embankment and on the promenade extension work at Blackpool. The granite works have been kept fairly well going. There are practically no unemployed men at Shap, and the new contract will therefore provide work for men from other areas.

Dock Bridge Tolls.

Another attempt is being made by the Wallasey and Birkenhead Corporation to free the Poulton Bridge on the Mersey Dock Estate from tolls. At a conference at the Birkenhead Town Hall, attended by an inspector of the Ministry of Transport, representatives of Wallasey and Birkenhead stated the case for the bridge to be made toll-free. It was decided to appoint a deputation to interview the Mersey Docks and Harbour Board upon the matter.

Garston Dock Superintendency.

On behalf of the staff of the L.M.S. Docks, Garston, Mr. J. B. Topham, the Superintendent, a few days ago, made a presentation to Mr. F. Postlethwaite, who after 44 years service with the company, latterly as chief of the coal and exports section, has retired. The gift took the form of a settee.

Quick Turn-round in Gladstone Dock.

Another outstanding performance in the quick turn-round of ships was recently completed at the Gladstone Dock, Liverpool. The ss. " Trematon " and the ss. " Trevider," sister ships, carrying between them 14,200 tons of wheat, berthed at Gladstone Dock. The " Trematon " arrived at the grain storage berth at 2 p.m. on a Wednesday. Pneumatic discharge was begun without delay, and the cargo of 7,300 tons was discharged by 6.30 p.m., on the Thursday. Having meanwhile bunkered she proceeded to sea, docking out through Gladstone, 31 hours after she had docked in. The actual working time for grain discharge was 24½ hours. The " Trevider " moved into the same berth on the Thursday evening, and discharge commenced at 6 a.m. on the following day. The discharge (6,900 tons) was completed at noon on Saturday, and in this case, the grain discharge working time was 25½ hours. The " Trevider " immediately put to sea, docking out through Gladstone. By such expeditious docking methods, and discharging facilities, Liverpool may yet still further enhance her reputation.

Future of Mersey Ferries.

Consideration is now being given to the future of the Birkenhead ferries, now that the Mersey traffic tunnel is approaching completion. By the provisions of the first Tunnel Act the undertaking (or such part of it as may be determined by the Birkenhead Corporation and the Joint Committee) is to be managed by the Corporation on behalf of the Joint Committee for 21 years after the opening of the tunnel for traffic. This means that Birkenhead is to be indemnified against any loss due to tunnel competition, and is evidence of the care with which the Birkenhead representatives approached the tunnel question at the very beginning. Subject to the Acts of Parliament governing the conduct of the ferries, the services will be worked under the direction of the Joint Committee, so that to some extent at least, financial responsibility and control will go hand in hand.

Much thought has been given by the Wallasey Town Council during the past month to the floating plant employed for the transport of passengers between the Wallasey ferries and Liverpool. It has been found necessary to replace the Royal Iris and the Royal Daffodil, and then the questions arose whether one new boat should be ordered, or two, and secondly whether the order should go to Dundee, Govan, or to the Birkenhead shipyard of Messrs. Cammell, Laird and Co., Ltd. Altogether seventeen tenders were received, four of which were lower than the one submitted by the Birkenhead firm, but as the full requirements of the specification were not complied with by the local tenderers, and as an undertaking was not forthcoming as to the employment of the proportion of local men stipulated by the Unemployment Grant Committee, a recommendation was made to place the contract with the Caledon Shipbuilding and Engineering Co., Ltd., of Dundee. As Messrs. Harland and Wolff, of Belfast, had submitted a lower tender of £43,290 for one boat and £86,680 for two boats, the committee subsequently amended its recommendation in their favour, provided the firm would comply with certain technical requirements in the specification. After a great deal of discussion it was decided to order one boat, which will be built by Messrs. Harland and Wolff at their Govan yard. The view was strongly urged that the service could be efficiently maintained with seven boats instead of eight, and it was wasteful to have 50 per cent. of the boats laid up in dock for eight months in the year. An enormous sum was being spent on the Seacombe Ferry improvements and in view of the developments of the municipal motor 'bus services and the approaching completion of the Mersey Tunnel, the need for caution was well warranted.

More Oil Traffic Expected.

Preparations are being made by the Manchester Ship Canal Company for the new engineering works at Stanlow and Irlam. The principal contract is for the construction of a new dock at Stanlow where there will be two berths for large vessels and where accommodation will be provided to deal with three times the quantity of oil that is now being handled. Stanlow dock is situated 4½ miles from the entrance to the Manchester Ship Canal and is considered to be a place eminently suitable for the development of the trade in low flashpoint oils. Since 1922, when the existing dock was opened there has been an average annual rate of increase in traffic of 25 per cent. and this average looks like being improved upon.

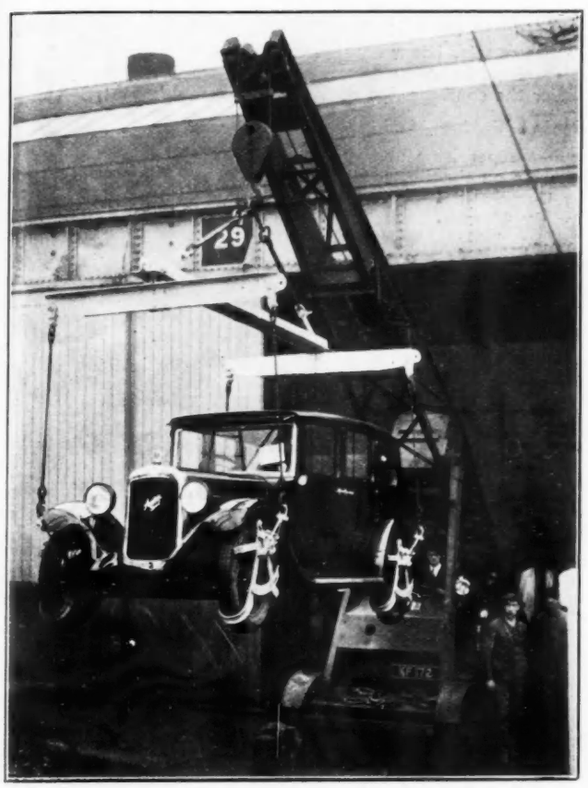
Guests of the Dock Board.

Mersey Docks and Harbour Board recently received a large party of Bradford wool merchants, who were escorted over the dock estate and shown the advantages which may be derived by utilising the excellent facilities which have been provided at the various docks. The party took a keen interest in the arrangements at the Gladstone Docks in particular. Mr. W. S. Crichton, chairman of the Dock Board's Trade Committee, acted as host.

Notes from the North—continued

Motor Car Lifting Appliances.

Many and various are the methods of handling motor-car traffic at the different ports of the country. Motorists sometimes look upon the seaboard as a barrier set across their path to vistas of opportunity. They jib at the ordeal of trusting their cars to unpractised hands and fear consequences which, happily, are more imaginative than real. Everybody will agree that the ideal method of transporting a car from terra firma to the ship or vice versa is by placing the car on a platform held by wire ropes and slinging it across the quay, without attaching any fittings that might cause damage. But there are practical difficulties to that



Motor Car Lifting Appliances.

method of loading, because at very few of the ports and certainly on none of the cross-channel steamers, do there exist the facilities for the operation of the flat system, particularly when a steamer might carry 20 or 30 cars per crossing. Representatives of the two principal motoring organisations, together with a few writers for the technical Press, recently had the opportunity of seeing at work a novel car handling appliance which is used by the British and Irish Steam Packet Company in connection with their services between Liverpool and Dublin and Belfast. It was demonstrated at Princes Dock, Liverpool, with (a) a Ransome five-ton quay crane and (b) ship's derrick. The appliance consists of a longitudinal beam fitted with cross members at the extremities. These are adjustable to fit any length of car from a Baby Austin to a Rolls Royce. Adjustments can also be made to the lifting tackle to ensure adequate clearance for the width of the car when the wire ropes are drawn taut. The most interesting parts of the appliance are those which actually bear the load. Four pairs of brackets, each looped and spaced to the shape of the wheel, are kept in position simply by the weight of the car. Our photograph clearly shows how the lifting apparatus fits over the wheel. Over the upper portion there is a horizontal plate lined with a thick rubber buffer which presses against the tyre. The hoops which carry the weight on the bottom surfaces of the tyre dispel the stresses that might be imposed on the axle by ingeniously causing the weight to be borne tangentially through the wheel. At the four suspension points the flexible fitting is locked outward to prevent the links from causing damage to the wings. Cars can be loaded or unloaded into the hold of a steamer either by means of the ship's derrick or by means of a land crane. It was proved by test that there was no danger of a weak tyre bursting under the weight of the car. Neither would a deflated tyre make the " lift " dangerous. Air was released from the tyre of a Singer car whilst it was suspended three or four feet above the quay level; the two shaped arms gradually dropped into position and carried the weight without slip or damage to the rim of the wheels. After being lifted overside the car was lowered into the hold and then safely stowed away.

From the fact that over 30,000 cars have been lifted by this tackle in the last four years without a single complaint having been received from owners is tribute enough to its general excellence. The appliance has been designed by Mr. David Barry, O.B.E., in collaboration with the technical experts of the British and Irish Steam Packet Company, and was manufactured by Dublin Dockyards Co., Ltd., Dublin. Representatives of the motoring organisations declared that the appliance seemed the next best thing to loading by means of a platform.

Liverpool Dock Nomenclature.

Mersey Docks and Harbour Board has confirmed the following recommendation of the Works Committee: " That the dock in the course of construction on the site of the Clarence Half Tide Dock, etc., designated Clarence Dock, together with the western ends of the existing Trafalgar and Victoria Docks, up to the Victoria-West Waterloo passage, be re-designated Trafalgar Dock; that the remainder of the existing Trafalgar Dock be re-designated Trafalgar Branch Dock, and that the remainder of the existing Victoria Dock retains its name; also that the new dock in the course of construction at Bidston Moss be designated Bidston Dock."

Thus Clarence Dock, where a great riverside electric power station is now being completed, will soon cease to have any official existence. When the Clarence was opened, in 1830, the most noteworthy of the then existing docks was the Prince's. The new dock, being for steamers, was constructed some distance away to avoid the risk of fire. It was the first work undertaken by that most famous of all dock engineers, Jesse Hartly, who, for 36 vital years, was surveyor and engineer to the Liverpool Dock Committee.

Morecambe Old Harbour.

A further stage has been reached in negotiations with regard to the Old Harbour development scheme between the Morecambe-Heysham Corporation and the L.M.S. Railway Co. The L.M.S. Company intimated that the Board have decided to build the L.M.S. Hotel at Morecambe subject to certain conditions, including a condition that the Corporation will forthwith complete the purchase of the Old Harbour, etc., premises, and the adjoining lands at the agreed price of £34,000 and £23,000 respectively, and at once put in hand the proposed scheme of promenade improvements with due regard to the provisions in the agreement of July, 1928, for the protection of the L.M.S. Company and their interests. Members of the Old Harbour Committee of the Corporation are informed that the authority for raising of the purchase-price of the Old Harbour is contained in the Morecambe Corporation Act, 1928, and it will be necessary to obtain sanction to the borrowing of £23,000 for the purchase of additional land, and also the sum of £9,750, being the estimated cost of constructing a new promenade on the Old Harbour site.

Liverpool Shipping Week.

From August 29th to September 5th, Merseyside will pay homage to shipping. During that period a Shipping Week will be held, the main features of which will be efforts for the revival of shipping, five great liners open to public inspection, river trips, and an exhibition of model ships and docks in St. George's Hall. Mr. F. J. Marquis, chairman of the Liverpool Organisation which is responsible for the planning of the event, states that for the past five years they had organised a widespread advertisement in some form or other for Liverpool and district. It was felt that this year they might concentrate on the form of transport which brought Merseyside its livelihood. It was on shipping that the city had been built, and it was a revival of activity at the docks to which we must look for any betterment in our present position. After consultation with the shipping companies it was agreed that this was an opportune time, when shipping was depressed and other ports were attracting a great deal of attention to themselves, to make some effective demonstration of Liverpool's high position in the shipping world.

In the exhibition there will be a very fine model of the Gladstone docks system, a model of the Bar Lightship and exhibits to show the evolution of buoys. The decorations of the exhibition hall itself will be provided by the flags of hundreds of shipping companies; a ship's bell will ring out the watches, and, if present plans mature, everyone on duty in the hall, will be attired in nautical costume. How the Port of Liverpool has evolved and kept abreast of the times will be shown by models and old prints—from the days when the Pool went into what are now busy streets to the building of the first dock and the present-day dock system. Another proposal is to erect in the hall a ship's bridge, together with a wireless room, in which will be displayed working instruments to the value of close on £4,000.

Notes from the North– continued

George's Dock Site.

Liverpool Corporation Baths Committee has adopted a resolution that in view of the fact that the George's Dock site is being sold to the Mersey Tunnel Joint Committee for £40,000, the Finance and General Purposes Committee of the Corporation should be requested to consider the question of providing a site for new Central Baths.

Russians come to see Liverpool Ships.

Representatives of the Russian Soviet Government who are touring English and Continental ports with the object of acquiring ships, second-hand or new, recently sent a delegation to Liverpool and Birkenhead, where they inspected two big tankers belonging to a well-known company, lying in the yard of Messrs. Cammell, Laird and Co., at Birkenhead. The delegates who came to Liverpool will report the result of their investigations to the main Commission with which rests the final decision as to purchase.

Llanfairfechan Foreshore.

Sanction of the Ministry of Health is now awaited by Llanfairfechan U.D.C. to its scheme for improving the foreshore and carry out sea defence works at a cost of £7,800. Mr. E. W. Whitley, Town Hall, Llanfairfechan, is the Engineer and Surveyor to the Council. The work is expected to be put in hand about October.

A Progressive Fishing Port.

The justification for the new dock works at Fleetwood is to be found in the fact that the value of the fish landed in the last twelve months was one million and three-quarter pounds. The work of widening the fish market is now almost complete and is one of the finest establishments of its kind in the country. About 170 fishing boats make their headquarters at Fleetwood, but there is also a large number of drifting trawlers and foreign trawlers operating from the port. The total number of landings at the port during the year was 6,061, of which 4,640 were made up of local vessels, 1,175 of British vessels from other ports and 246 of foreign vessels. During the period 65,000 tons of all varieties of fish were landed. Over 22,500,000 gallons of fresh water had been used by the fishing boats.

Welsh Stone for Sea Defence Works.

For the sea defence works now in process of construction at Barmouth, it has been decided to use Welsh stone in place of Empire stone. At the last meeting of the Council, the engineer, Mr. Stanley Richards, said that if Welsh stone were used, the contractor would require £540 more than if Empire stone were used, but it would last much longer. The decision to use Welsh stone was only come to by a small majority.

Altering the Course of the Birkett.

A scheme drawn up with the assistance of experts, has been submitted by the Birkenhead Corporation to the Wallasey Corporation for dealing with Wirral's troublesome river, the Birkett. At present the Birkett, fed by the Arrowe, Greasby and Fender brooks, crosses the Wirral and plunges into the bowels of the earth at the extremity of the Birkenhead Docks. Thence, by way of the "Great Culvert," it pursues a subterranean course under Birkenhead until it reaches the River Mersey, into which it empties itself at a point near Woodside Landing Stage. At high tide, the river outlet is automatically closed by the rising of the water. The river then "backs up," and in the vicinity of Bidston is often observed to be flowing in the wrong direction. Flooding periodically occurs, especially in the rainy seasons, and it has long been realised that the only way of dealing with the trouble is to cut a new channel through which the Birkett can empty its surplus water into the Irish Sea.

A £35,000 scheme has been prepared by the Cheshire County Council in collaboration with the Wallasey Corporation for the cutting of a channel in the vicinity of Leasowe Lighthouse. This would relieve all pressure from the upper reaches of the Birkett, and also from the Arrowe and Greasby Brooks, but would not affect the more important stream of the Fender.

Owing to the Birkenhead Corporation's inability to approve the proposals, however, the matter has been in abeyance, and Birkenhead has now submitted an alternative scheme, which is under the consideration of Wallasey and the County Council.

Dock Weighing Machines.

The supervision and correction of weighing instruments and weights on the Liverpool Dock Estate is regulraly undertaken by Corporation inspectors, who during the past year examined for the Mersey Docks and Harbour Board, on the dock estate 8,461 weights of which 5,891 were found to be correct, and 505 weighing instruments of which 464 were found to be correct.

Bromborough Dock Bye-laws.

Messrs. Lever Brothers, Limited, of Port Sunlight, have given notice of their intention to apply to the Minister of Transport for approval of general Bye-laws, proposed to be made by them in respect to their Bromborough Dock undertaking.

Whitehaven Harbour Board.

At the annual meeting of the Whitehaven Harbour Board, Mr. J. H. Cant said that since January the trade of the harbour had been steadily declining and they had reached that stage when they had their backs to the wall. In 1929-30 the coal shipments totalled 198,272 tons, and in 1930-31 the figures had dropped to 183,310 tons, while during the past three months there had been an average of only 3,300 tons per week. On these figures, he added, the harbour could just about exist and that was all. They could only hope that the black clouds overhanging the coal trade would soon lift and the silver lining be revealed.

Two Craft Lose Propellers in Canada Dock.

Two vessels in Canada Dock, Liverpool, the P.S.N.C. liner "Oroya" and the Alexandra Towing Company's tug "Huskisson," lost their propellers in a remarkable mishap that occurred about three weeks ago. Two tugs were engaged in manœuvring the "Oroya" from Canada Dock in preparation for her entering the river. One tug was in attendance astern and the other forward. By some means the tug "Huskisson" at the stern came close to the stern of the "Oroya," and the propellers of both vessels became interlocked. It soon became evident that the propeller of the tug had gone. The "Oroya" was taken to the Sandon Half Tide Dock, where divers who examined her found that the rudder had been damaged and the propeller was missing.

Bombay Port Trust

At a meeting of the Trustees of the Port of Bombay held on 16th June, 1931, the following were the main items of business disposed of:—

Payment of Rs. 3,15,325 to the G.I.P. Railway representing the difference in values of lands exchanged between the Bombay Port Trust and the G.I.P. Railway since 1912 was sanctioned, subject to the sanction of the Government.

In response to a representation from the Grain Merchants' Association for reduction of rent of the Port Trust godowns at the Ryan Grain Market in view of the depressed state of the grain trade, the Board decided to grant a rebate of 15 per cent. for a period of six months after which the position will be reconsidered.

Vessels, other than ferry steamers, hired transports, Government vessels and country craft, which entered and left the Port of Bombay:—

	1930 Quarter ended 31st Mar. No.	1930 Quarter ended 31st Mar. Nett Register Tonnage	1931 Quarter ended 31st Mar. No.	1931 Quarter ended 31st Mar. Nett Register Tonnage
(a) Entered.				
Vessels engaged in foreign trade ...	245	1,003,695	244	998,034
Vessels engaged in coasting trade	656	536,067	652	526,186
Total from 1st April to 31st March	2,922	5,293,189	2,881	5,163,851
(b) Cleared.				
Vessels engaged in foreign trade ...	204	818,847	193	806,944
Vessels engaged in coasting trade	694	700,095	694	727,152
Total from 1st April to 31st March	2,916	5,325,532	2,845	5,124,687

Imports and exports at the Port of Bombay:—

	1930 Quarter ended 31st March Import Tons	Export Tons	Total Tons	1931 Quarter ended 31st March Import Tons	Export Tons	Total Tons
Docks	602,336	707,343	1,309,679	602,599	696,978	1,299,577
,, (transhipment)	29,222	35,309	64,531	12,533	30,217	42,750
Bunders	351 902	131,203	483,105	297,941	121,726	419,667
Total	983,460	873,855	1,857,315	913,073	848,921	1,761,954
Total from 1st April to 31st March ...	3,553,477	3,120,130	6,673,607	2,946,339	2,911,063	5,857,402

The Port of Amsterdam

By L. BOOGERD, Director of the Seaport and Airport at Amsterdam; and JHR. J. E. VAN HEEMSKERCK VAN BEUSEKOM, Chief Engineer, Chief of the Docks Division of the Public Works Department of the Corporation of Amsterdam

Fig. II. The North Sea Canal.

THE Port of Amsterdam is one of the oldest on the Continent. It was originally only accessible from the east, i.e., across the Zuider Zee (see Fig. I.). The difficulty experienced owing to the sandbank Pampus outside the entrance increased as the ships grew in size. The entrance was silting up and made a better connection between the open sea and the harbour imperative. The *Groot Noord-Hollandsch Kanaal*, or North Holland Canal, which was finished in 1825 (Fig. I.) met this need by connecting the harbour with the North Sea.

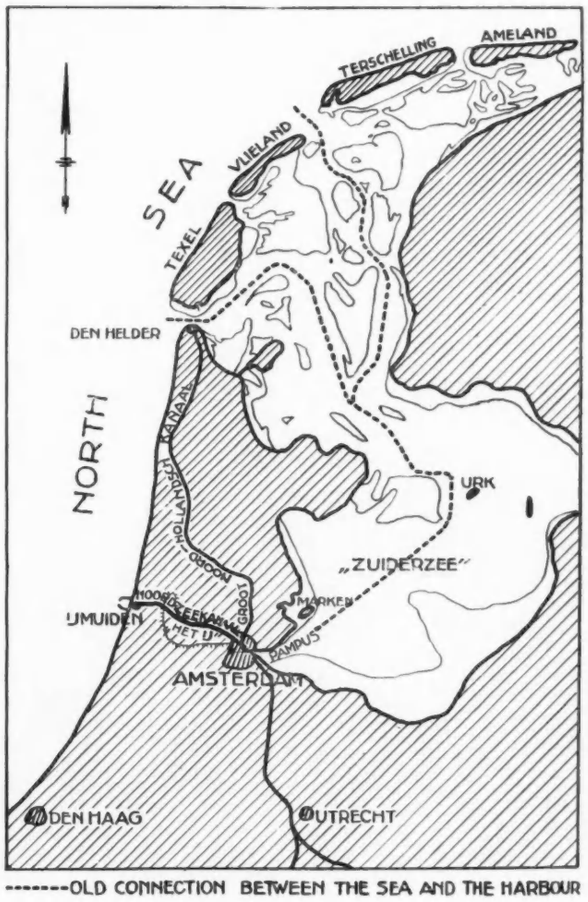


Fig. I.

This canal, however, with its many bends, eventually proved inadequate to accommodate the shipping to Amsterdam and the need of a new and larger connection with the sea was increasingly felt. In 1876 the North Sea Canal, which is only 24 kilometres long and forms the shortest connection between the Port of Amsterdam and the North Sea, was completed (see Fig. 1).

The North Sea Canal is shut off from the sea by locks at Ymuiden (see supplement). The largest of these was opened last year (1930). The length of the lock-chamber is 400 metres, the width 50 metres, whereas the depth on sill is 15 metres. The depth of the canal itself, which is at present 10.30 metres below A.L. (Amsterdam Level), will be made equal to the depth on sill of this lock; the depth will first be increased to 12.50 metres, and then to 15 metres, while the width at bottom, which is at present still 50 metres will, to begin with, be widened to 75 metres and subsequently to 100 metres. These improvements have already been commenced and will soon be in full swing; when these operations have been completed the largest ships which it is expected will be built within the next few decades, will be able to pass through this canal on their way to Amsterdam.

Second to a good and safe connection with the sea, ensuring the rapid and regular import and export of produce and

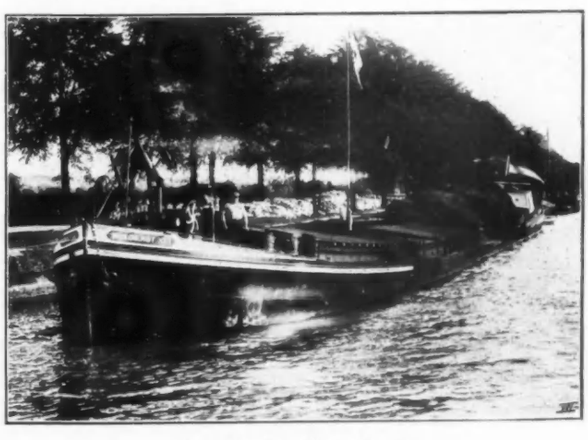


Fig. III. The Rhine Canal.

The Port of Amsterdam—continued

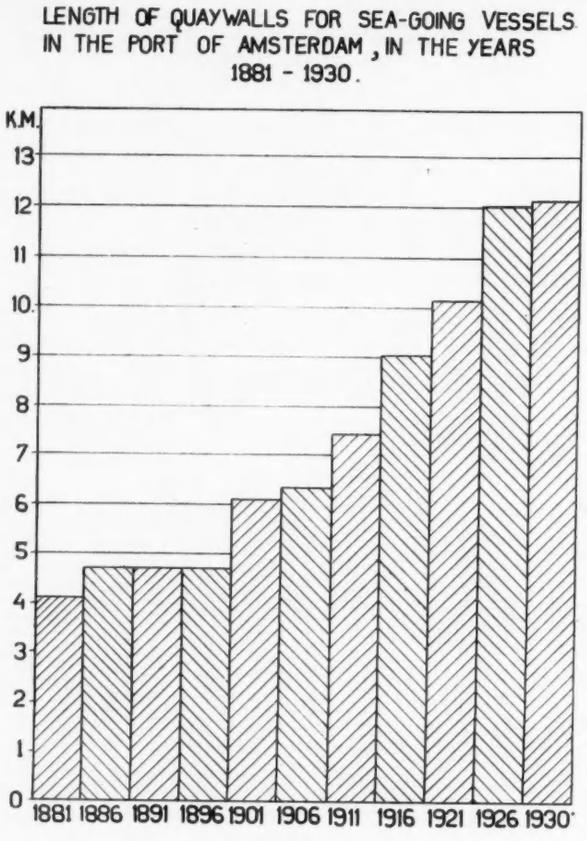


Fig. IV.

merchandise to and from overseas, a port requires convenient inland waterways to link it up with its extensive hinterland, the Rhine and its tributaries, and even beyond, in order to provide rapid channels for its transit traffic.

Formerly this traffic had to cross the Zuider Zee, to find its way to the Rhine by various inland waterways. As this route was frequently difficult owing to the stormy weather in the Zuider Zee, a means was found, about the time of the graving of the North Holland Canal in 1825, of taking it through inland waterways which also permitted the use of larger vessels for this inland traffic.

The connection of this port with the Rhine at present in use is the *Merwedekanaal*, which was opened to traffic in 1892. This canal is navigable by ships up to 2,000 tons. The constantly increasing Rhine traffic and the growing size of the vessels has, however, made it imperative to project a new Rhine canal which will admit traffic with ships or barges up to 4,300 tons, and whereby the distance from Amsterdam to the Rhine will at the same time be considerably shortened (by about 16 kilometres). The bill for the construction of this canal was definitely passed by Parliament on the 26th of March, 1931, and the execution of the project has been energetically taken in hand.

It may also be mentioned that Amsterdam is connected with all the other ports of Holland by numerous waterways, and nearly all deep water quays of the port have convenient railway sidings which make it possible to convey goods, discharged straight from the ship, by rail to all parts of the Hinterland.

One of the oldest quays for the ocean-going vessels is the *Handelskade* or Commercial Quay, of about 2,100 metres in length, the building of which was commenced in 1875. How the length of quays in the Port of Amsterdam has grown since this date is clearly shown in the accompanying plan (Fig. IV.). It will be seen that there are not less than 13 kilometres of quays and wharves with deep water alongside at the disposal of shipping for the berthing of seagoing vessels. The length of wharves available for Rhine and inland shipping in the harbour is 5 kilometres and along the canals and river inside the city 92 kilometres.

As in Ymuiden, there are also locks (the Orange Locks) on the side of the Zuider Zee, near Schellingwoude (see the supplement). Consequently the entire port and the North Sea Canal form one large basin or dock, which eliminates all inconvenience due to the tides, as is the case with harbours directly connected with the sea.

The fact that the water in the docks and basins is always calm and at the same level not only offers the advantage that

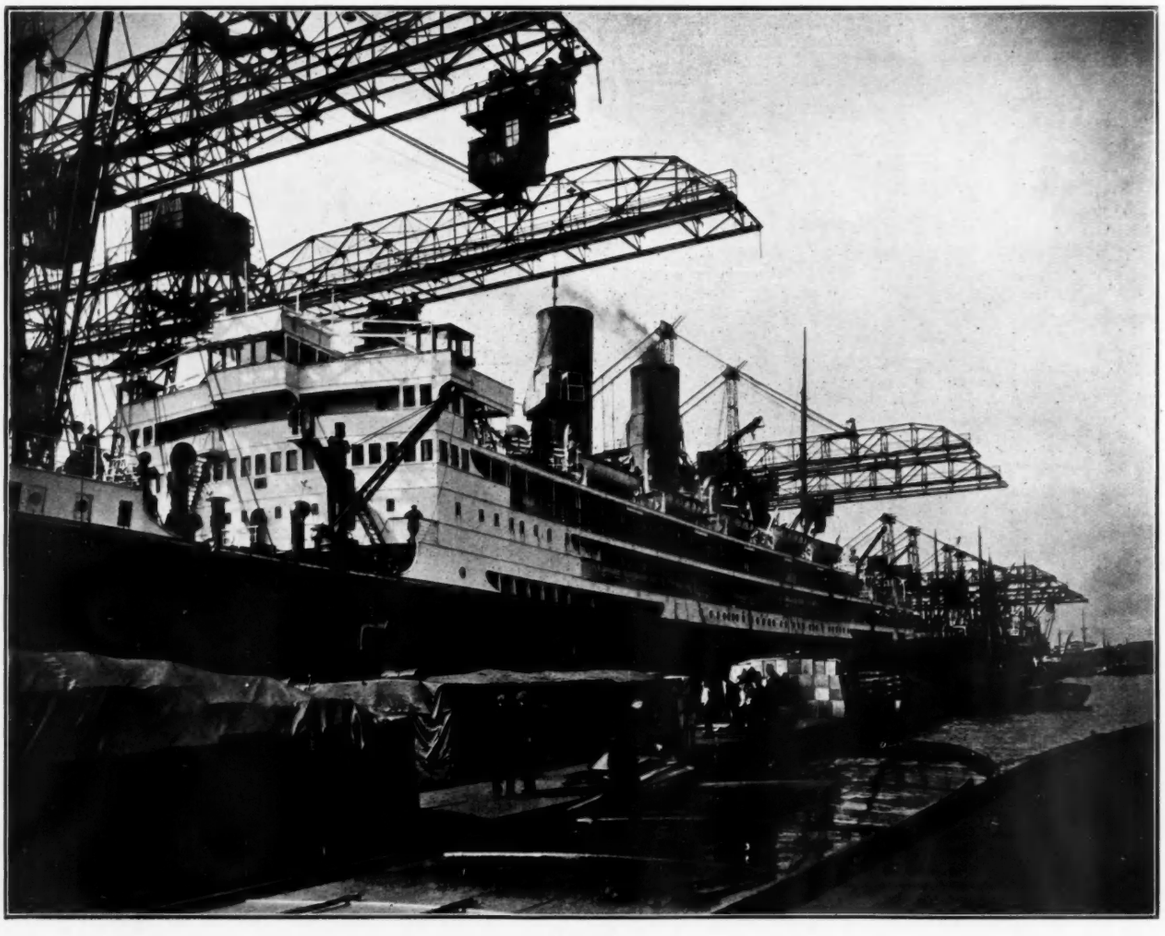


Fig. V.

The Port of Amsterdam

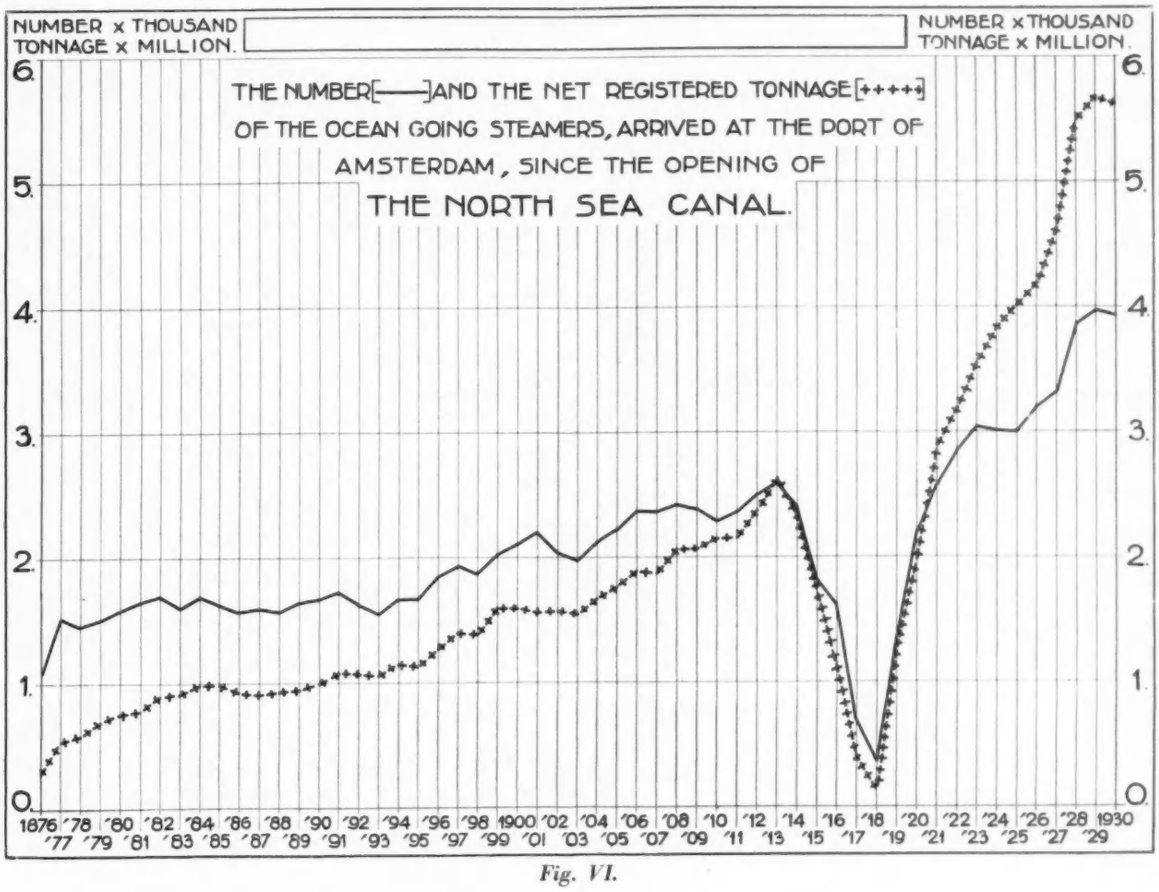


Fig. VI.

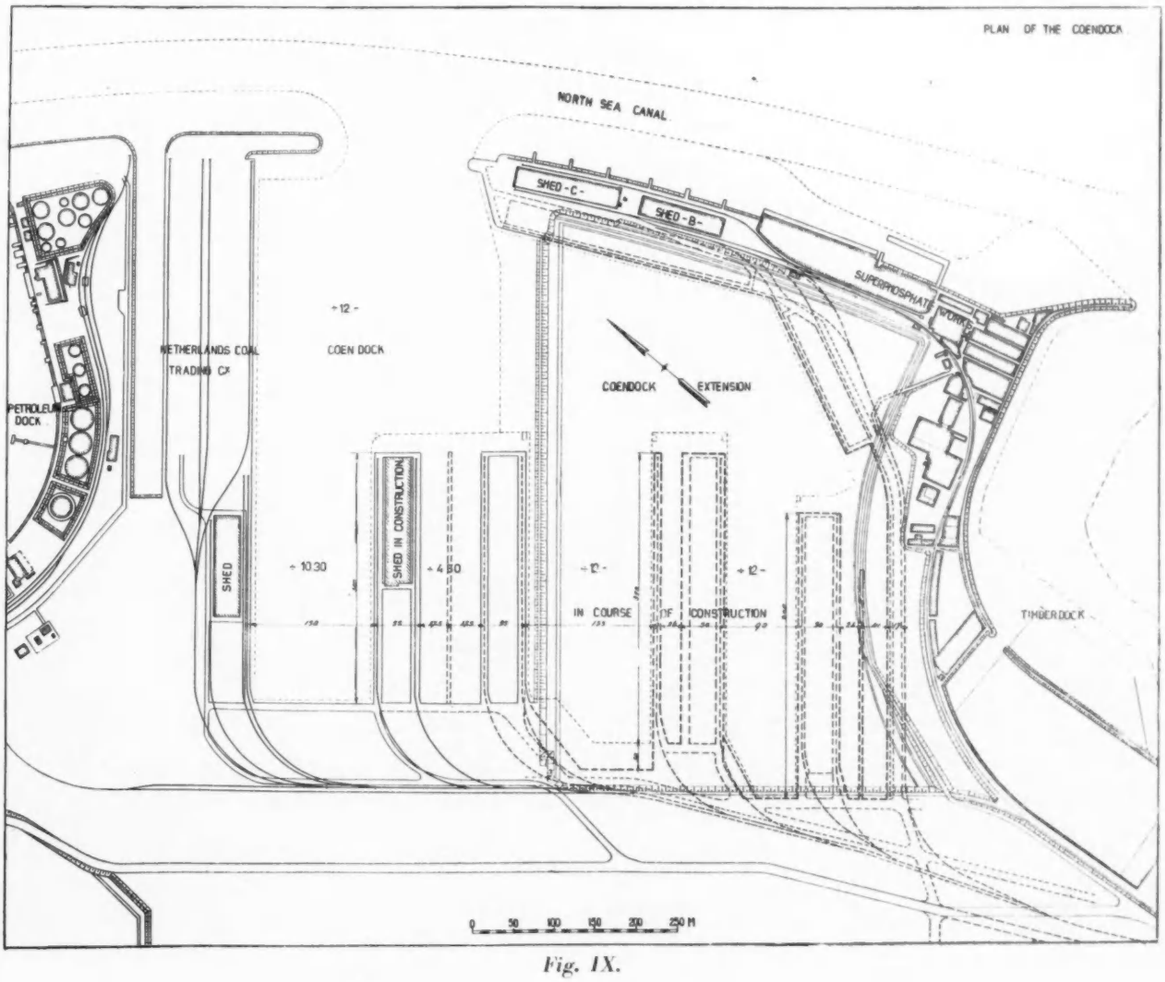


Fig. IX.

The Port of Amsterdam—continued

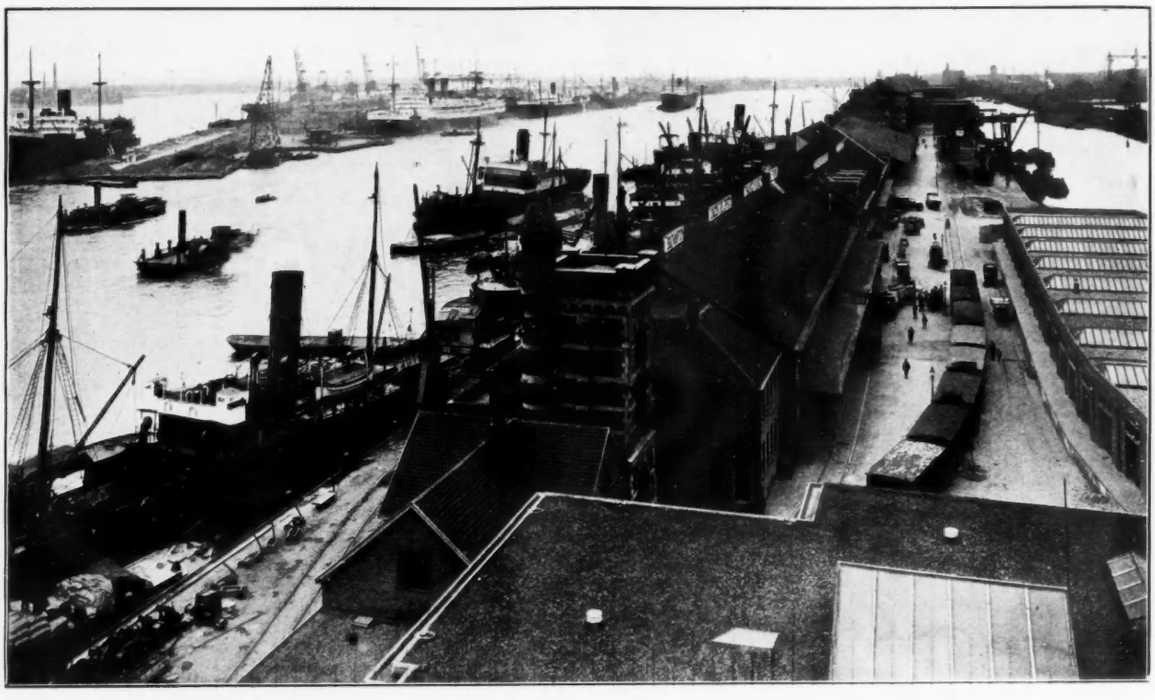


Fig. VII. A view of a part of the Eastern harbour which is used for general cargo.

the loading and discharge of ships can proceed at all times quickly and without interruption, but it also permits the use of a cheap means of transport for the conveyance of merchandise from one ship to another or from the ship to the inner parts of the town, such as small decked boats or lighters, handled by one man, as these can be loaded or discharged alongside the seagoing vessels (Fig. V.).

Except during the years of the great war, the volume of shipping which entered the Port of Amsterdam has followed an increasingly upward trend since the opening of the North Sea Canal, which will be clear from the accompanying diagram showing the number and the tonnage of seagoing vessels which called at this port (Fig. VI.).

The Rhine traffic which, as already stated, is closely connected with the ocean trade, is also increasing yearly, although not to the same extent as the sea-borne traffic. It is expected that after the completion of the new Rhine Canal traffic to the Rhine and consequently the sea-borne traffic to and from Amsterdam, particularly through traffic, will increase considerably.

The following table, giving the figures of the volume of goods traffic at the port during the last ten years, will give an idea of the rate of increase:—

	By Sea		By River and Canal	
	Entered	Cleared	Entered	Cleared
	In Tons of 1,000 Kilogrammes		In tons of 1,000 Kilogrammes	
1921	2,146,635	1,296,167	872,766	205,748
1922	2,992,634	1,128,093	923,235	311,028
1923	3,141,364	1,088,879	667,010	214,672
1924	3,033,966	1,340,684	1,572,158	442,276
1925	2,755,873	1,522,996	2,180,046	457,779
1926	2,501,991	2,091,358	2,423,084	479,402
1927	3,387,732	1,859,205	2,136,193	664,087
1928	3,832,229	2,220,392	2,213,006	794,206
1929	4,229,575	2,333,335	2,245,685	882,584
1930	4,025,782	1,978,377	2,107,516	779,253

The Port of Amsterdam is equipped for the handling of both general cargo and bulk cargo.

The loading, discharge and further handling of general cargo (of which a considerable proportion is colonial products, such as coffee, tobacco, tea, cinchona-bark, etc.), is at present still

Fig. VIII. The Suriname Quay.

The Port of Amsterdam

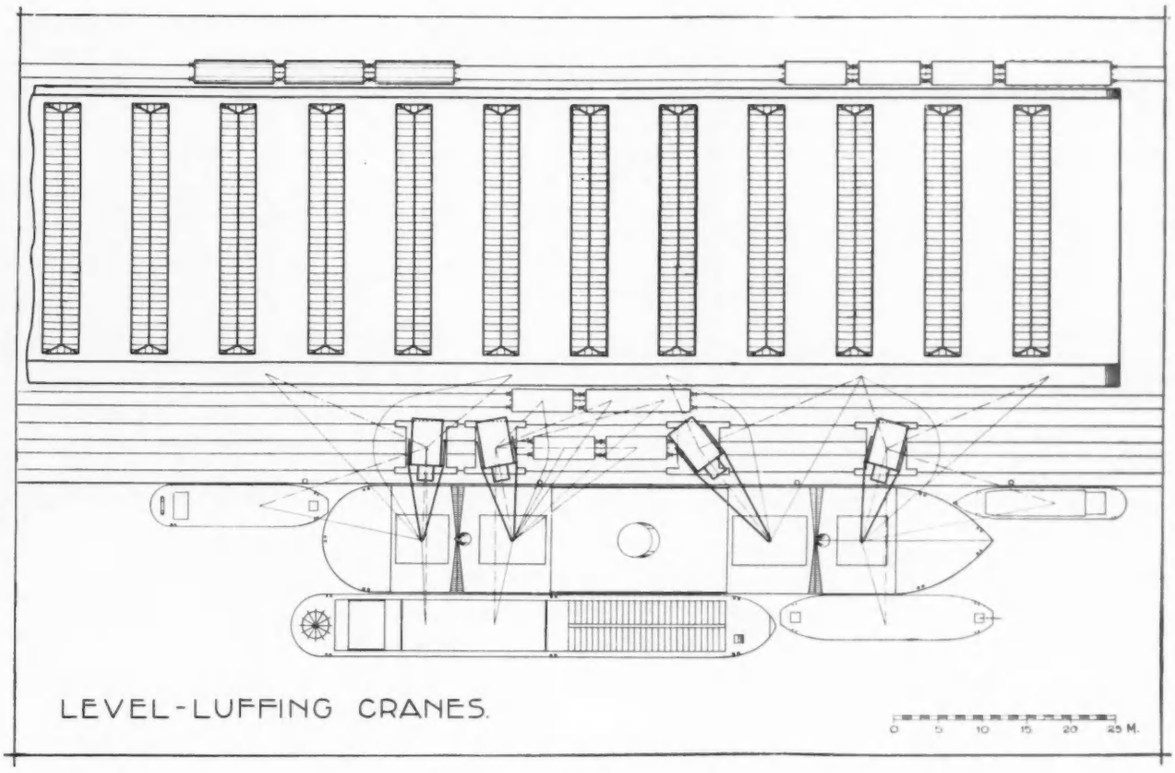


Fig. Xa.

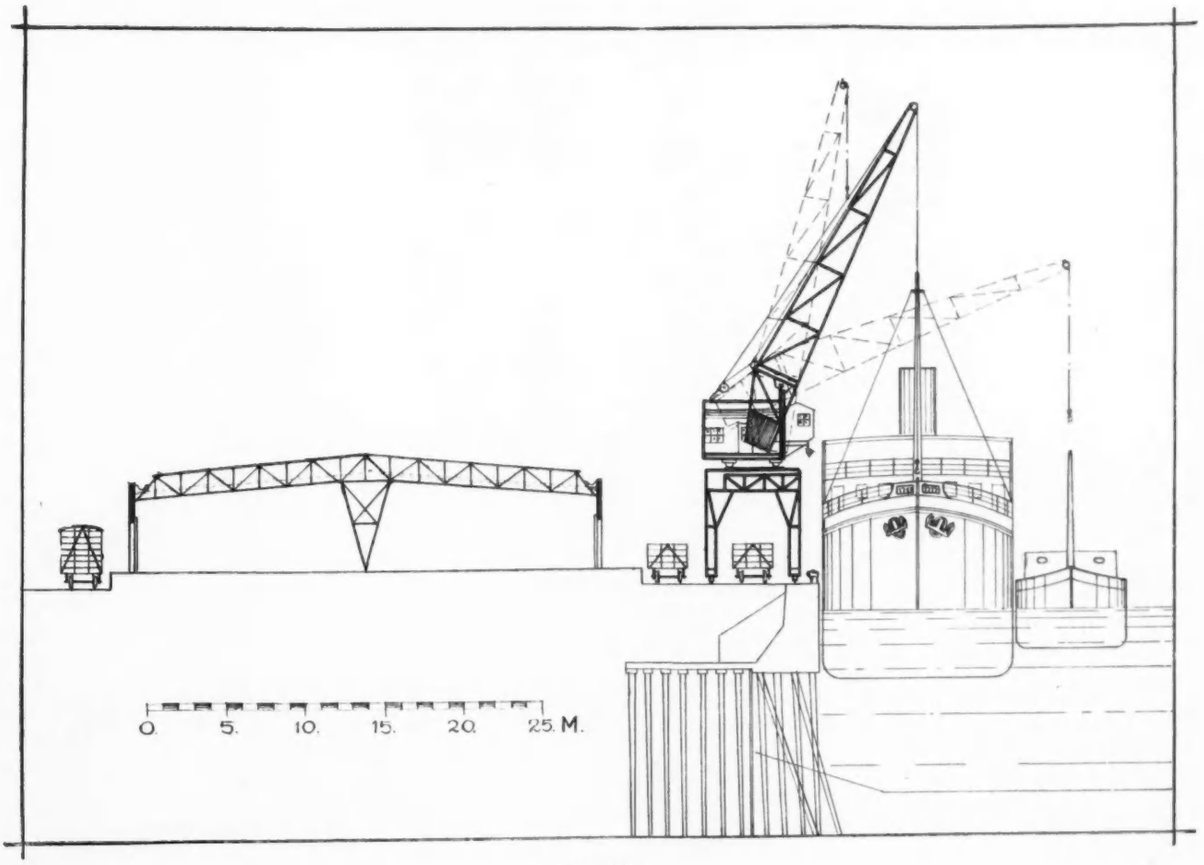


Fig. Xb.

The Port of Amsterdam—continued

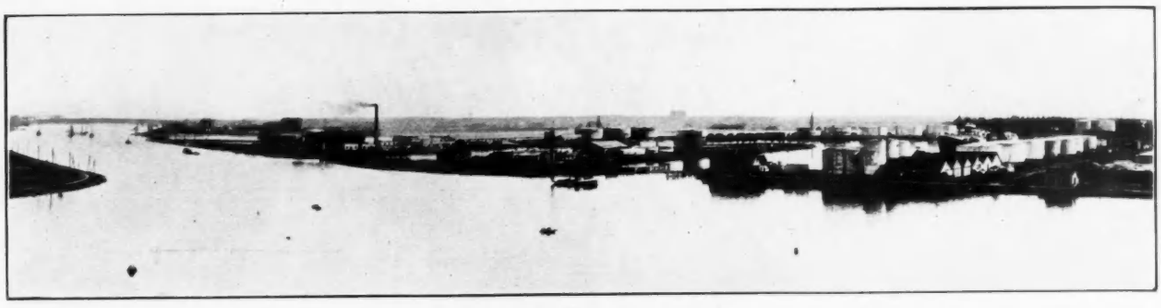


Fig. XI. The Petroleum Dock.

chiefly carried on in the eastern part of the harbour. There will be found the large establishments of the shipping companies with regular steamship lines, which cover, in that part of the harbour alone, a length of quays of about 8½ kilometres.

The land along the quays is leased for long or short periods to shipowners whose steamers carry trade to Amsterdam. These firms then erect the sheds and cranes necessary for their business, but if desired the municipality will build the sheds and equip the quays with cranes, which are then placed at the disposal of the shipping companies at a moderate charge.

Fig. XII. The Timber Dock.

For general use, i.e., for ships not belonging to the shipping companies established in the port, the municipality will provide the sheds, the land and the cranes at moderate charges; for sheds and land per square metre of space occupied and per diem, for the use of cranes per hour.

Wharfage is not charged in the Port of Amsterdam.

As the traffic in the harbour, especially during the last few years, has increased considerably, the construction of a new dock, the graving of the *Coenhaven*, or Coen Dock, in the western area has been commenced in order to satisfy the need for more quay-space. This dock forms part of the projected extension in the western part of the harbour (see supplement and Fig. IX.). Half of the Coen Dock was ready for use in 1925. The west side of this dock is now being used for storing and bunkering coal. For the loading and discharge of seagoing vessels a few transporter cranes have been erected here. The southern part of this basin and the first pier of this dock have already been provided with sheds and equipped with modern cranes, known as "level-luffing cranes," to be used for the loading and discharge of general cargo. The great advantage of these cranes over and above those being used at present is the fact that the arms of these cranes are movable vertically. The illustrations below will clearly show this advantage.

Fig. XVII. The Levant Quay.

With regard to the importance of Amsterdam as a harbour for the discharge of bulk cargo it must be mentioned in the first place that in the Petroleum Dock, which is accessible to ocean-going vessels, the municipality possesses a large number of tanks which are leased to various importers for the storage of mineral oils. The municipality provides these tanks and other equipment for the storage and delivery of oils at a moderate charge.

In addition to this, there are a number of tanks in the Petroleum Dock which belong to and are being used by private firms. The total capacity of all tanks together exceeds 130,000 cubic metres.

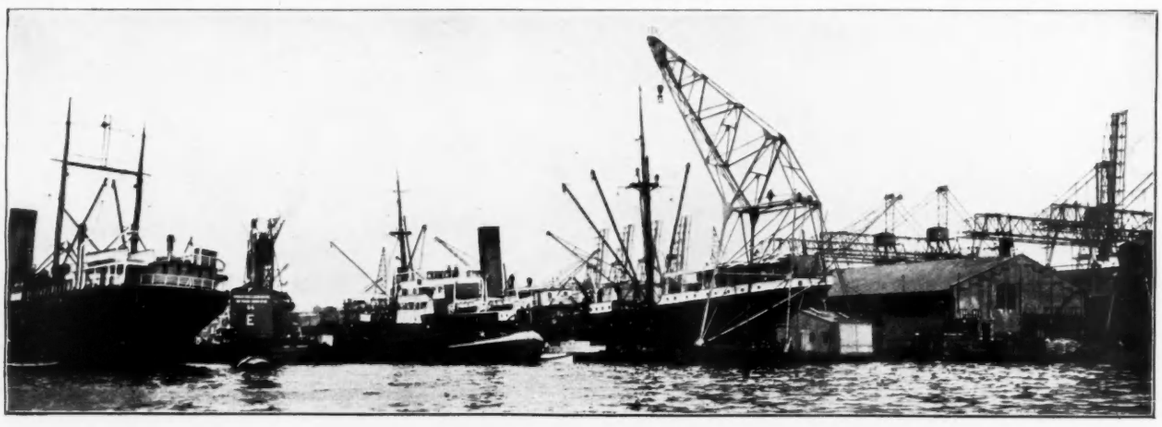


Fig. XIV. The Yara Quay.

The Port of Amsterdam

Fig. XVI. A 32-ton Crane loading marble.

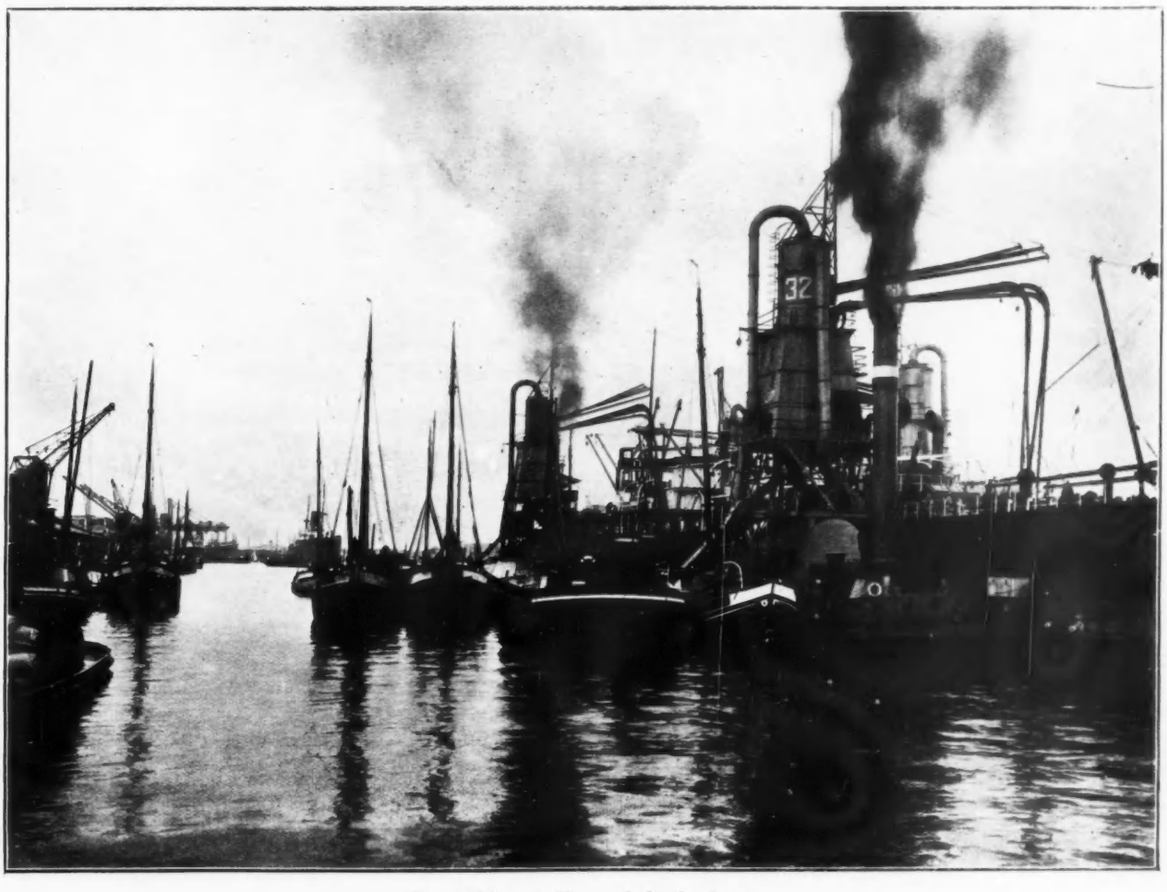


Fig. XIX. A View of the harbour.

The Port of Amsterdam—continued

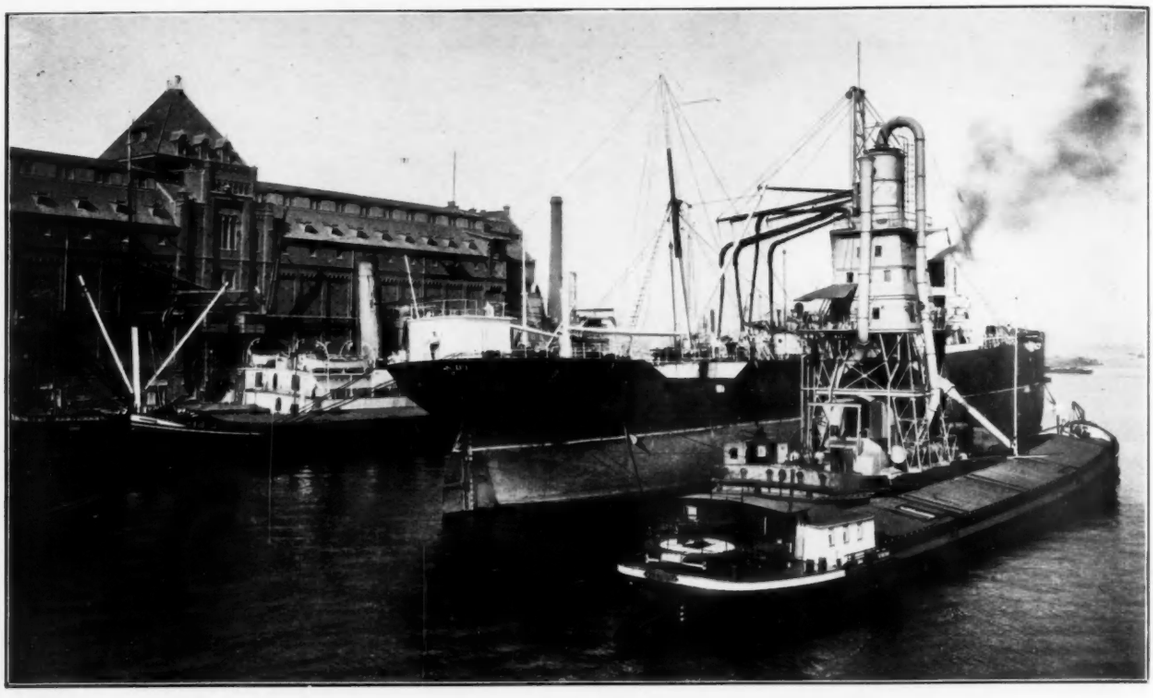


Fig. XIII. The Granary.

There is a Timber Dock for the storing of wood. The timber arrivals at this port have shown such an upward trend during the past year that an extension of this dock—which is at present the largest in Europe after the Port of London—has proved necessary. Part of the new Timber Dock, which is included in the above-mentioned projected extension in the western area, is in course of construction. After it has been completed, the present land and water area of 150 hectares will have been increased by about 90 hectares, or 225 acres.

For the storing and handling of cereals, the port is equipped with a grain silo or elevator with a storage capacity of about 18,000 tons. Grain steamers may be berthed alongside this building and are discharged by means of pneumatic elevators from the building itself. For the discharge of the cargo of these steamers into inland vessels or vice versa a number of floating pneumatic elevators with a loading capacity of 250 tons per hour each have been provided (Fig. XIII.).

For the transhipment of coal and ore, several installations such as floating grab cranes, coal tips, electric transporter cranes, etc., are available (Fig. XIV.).

In this connection mention may also be made of the two special coal-bunkering stations in the port, one in the western area as indicated above and the other in the eastern part of the harbour. They are furnished with the most modern equipment such as transporter and other land cranes in order to ensure rapid and inexpensive bunkering.

It may also be added that ships which call at Amsterdam solely for bunkering purposes are exempt from harbour dues.

Further, the tariff of harbour dues will shortly be entirely revised considerably to the advantage of all kinds of sea-borne traffic to Amsterdam. Where formerly harbour dues were exclusively charged according to the gross tonnage of the vessel, the amount of the harbour dues is now determined not only according to the tonnage of the ship, but also according

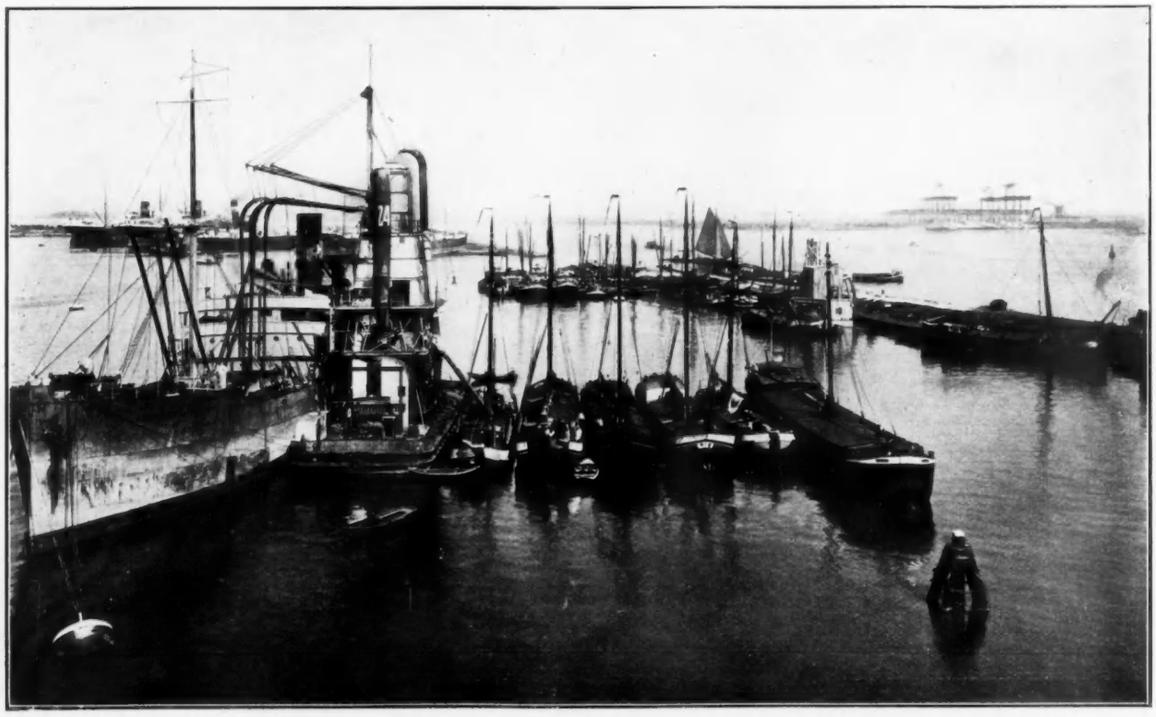


Fig. XVIII. Unloading Cereals from a sea-going vessel into river boats.

The Port of Amsterdam—continued

to whether it is loaded or in ballast, so that steamers with a small cargo are not charged dues out of proportion to those bringing a large cargo. In addition, if the same steamer visits the port three times during one calendar year, a part of the harbour dues, calculated on this basis, will be refunded. In the Port of Amsterdam there are available for the maintenance and repair of ships not less than 13 dry docks, of which three are graving docks and 10 are floating docks with a capacity, in the case of the graving docks of 12,000 to 30,000 tons, and in the case of the floating docks from 300 to 25,000 tons.

Finally, in order to demonstrate more clearly the important place which the Port of Amsterdam now occupies in the world's shipping traffic than appears from the above short review, it may be said that the shipping companies which are established at Amsterdam, possess no less than 70 steamship lines, calling regularly at ports in all parts of the world, thus forming a permanent link between the largest ports of the whole world and the Port of Amsterdam.

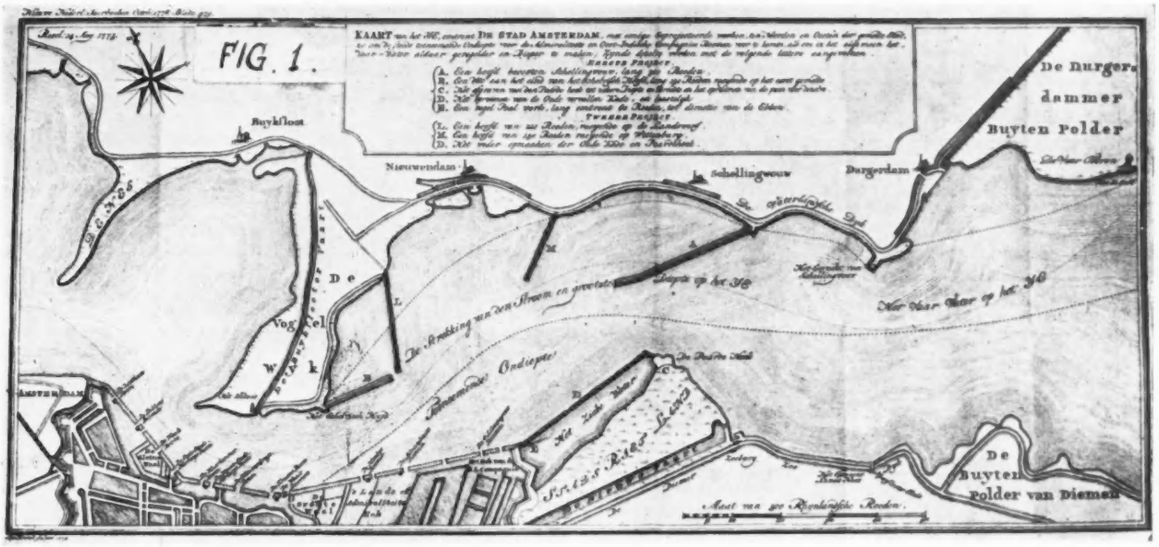


Fig. 1.

The Construction of Quay Walls.

As is the case with so many other seaports, Amsterdam is built upon loose soil at the mouth of the River Amstel. When the land now covered by the Zuider Zee was washed away to such an extent that ships were able to reach the Amstel, the Y became so large that it did service as regulating reservoir for the Amstel.

If we take a look at a map of the Y as it was in the year 1771 (Fig. 1), it will be seen that the breadth of the Y before the city was rather narrow as compared with the basin and that the ebb-current was diverted towards the south bank by the two tongues of land, the Nes and the Volewijk, situated on the opposite side of the Y. Considering that the actual harbour was at that time formed by a ring of piles rammed into the Y, and the vessels intended for deep-sea navigation generally anchored upstream in the Y outside the ring of piles, these piles formed an obstacle preventing the current from penetrating into the harbour with any force and carrying away the mud held in solution. Consequently, deposits of mud of the Y arose in front of the city, which assumed such proportions in the second half of the 18th Century that the depth of the water in places where, a century earlier, it had been 15 metres or more, had been reduced by half.

Despite the introduction of jetties, and regular dredging operations, the mud deposits continued and it was only after the construction of the North Sea Canal, in the years 1865—1875, when the Y was shut off by sluices at Schellingwoude from the Zuider Zee, that an end came to the silting up of the port (Fig. 1).

When new docks and basins possessing greater accommodation and convenience were projected during the last 50 years, as required by the growing volume of shipping, the difficulties of carrying out such works in the proximity of a silted up portion of the harbour came to the fore, and it then appeared that quays suitable for ocean-going vessels could only be constructed in the Port of Amsterdam at considerable cost and risk.

If we study the ground-borings which were carried out in the course of years in the dock area, the results of which are indicated by black dots and letters in the supplement and the products in Fig. 2, five conclusions are arrived at:—

1. Building land where, upon the surface or at an extremely slight depth, an area of sufficient resistance for building purposes is met with is only to be found in small surfaces in the oldest parts, and therefore requires no further consideration.

2.—Building ground where at a depth of about 5 metres above A.L. of fine sand, the sub-soil is mixed with heavy clay of which the percentage varies from 15 per cent. to 50 per cent. A solid foundation is met with at a depth of 11 to 12 metres below A.L. This condition of soil certainly occurs most frequently in the great Y polder and Amsterdam Polder. There the foundation lies at 2.70 metres below A.L. and at about 5 metres below A.L. the strata consists of loam, clay with sand and shells, and below this a loose boggy soil (see borings A, B, C and D on the supplement).

3.—A soil at a depth of 10 metres to 14 metres below A.L. a solid sandplate of varying thickness is found. This is chiefly encountered in the greater part of the City already built upon, and also in certain parts of the harbour. In most cases this sand bank forms the foundation for private buildings, for which purpose piles of 10 to 14 metres in length are used, the foundation of the building being laid at a depth of 0.80 below A.L.

In the soil of what was originally arable and meadow land, as is generally the case in the urban areas, the upper strata as a rule generally consists of loam, bog and clay; in the harbour, on the other hand, of mud, bog and a stratum of clay, which is, moreover, more or less in a loose condition.

4. A soil where at a greater depth than 14 metres below A.L. the first sand or firm stratum is met with, or if the first sand stratum occurring at a lesser depth proves not to be thick enough or of insufficient resistance and is followed at a greater depth than 14 metres by a second solid stratum, in which piles of 15 to 20 metres form a satisfactory foundation for the purpose.

The covering upper strata are of the same composition as those described under 3. This composition of soil is met with, for example, in the district of the Y island and a section of the city, viz., the Rietlanden (see borings F, H, M, N, O, P, Q).

5. A soil where only at a depth of 20 to 25 metres below A.L. a satisfactory foundation, consisting of coarse sand, is to be found.

The various strata are formed of lavers of mud, boggy soil and loose clay deposits mixed with fine sand (see borings E, G, K) and vary in thickness and depth. This condition of soil, which may certainly be called extremely unfavourable, runs through the entire dock area as a continuous and comparatively narrow channel in the direction of the old channel in the former Open Y (Fig. 1).

Generally speaking, it may be said that the soil running from the City in the direction of the Y is worse, while on the opposite side of the Y, in the direction of the Waterland Sea Dyke, the condition improves (see the borings J, L).

From the foregoing it appears that in the eastern dock area where the greater part of the quay walls are built, the more or less loose upper strata resting upon sand strata had not sufficient carrying power and, moreover, exhibited an inclination to deviate sideways after every disturbance of equilibrium.

In view of these unfavourable characteristics of the soil, it has for a long time past proved to be necessary to carry out costly and heavy ground work, preceded, in the dock area, by the creation of building land by dumping sand.

Though it was at first believed that satisfactory results would be obtained if the spaces were only partly filled up, and that

The Port of Amsterdam

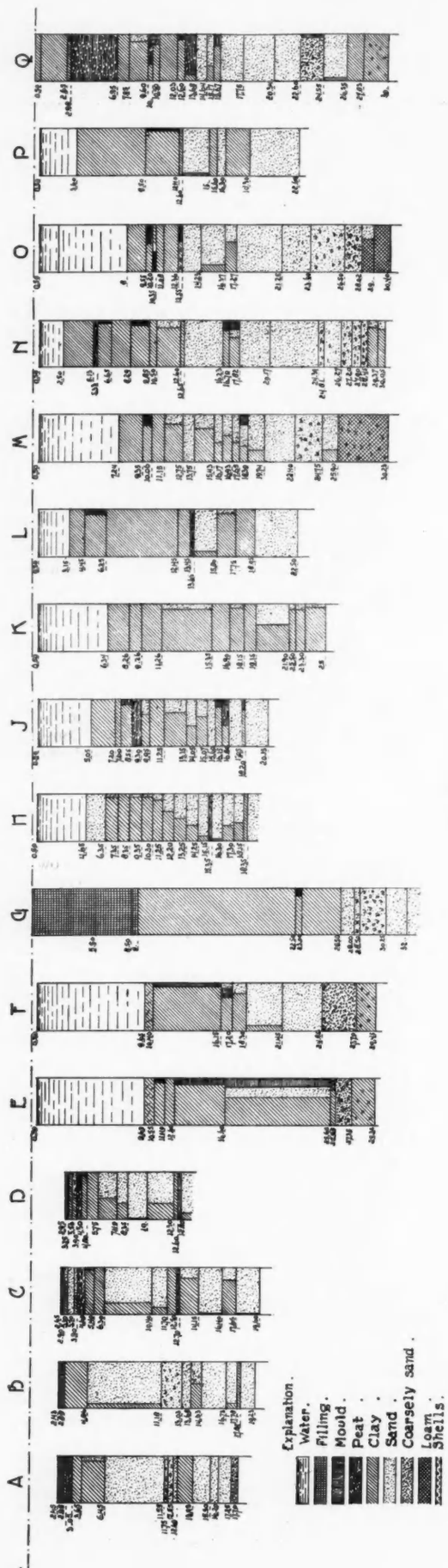


Fig. 2.

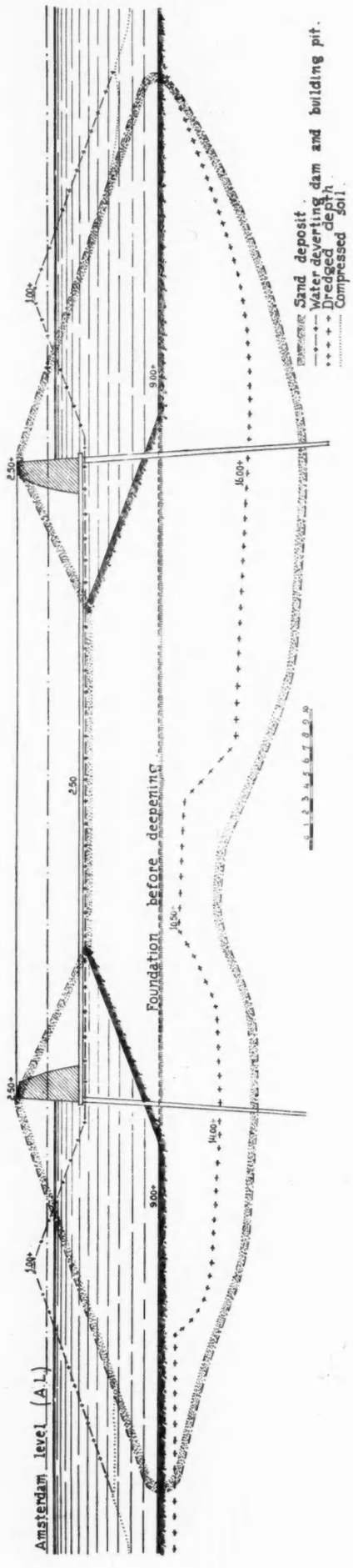


Fig. 5.

The Port of Amsterdam—continued

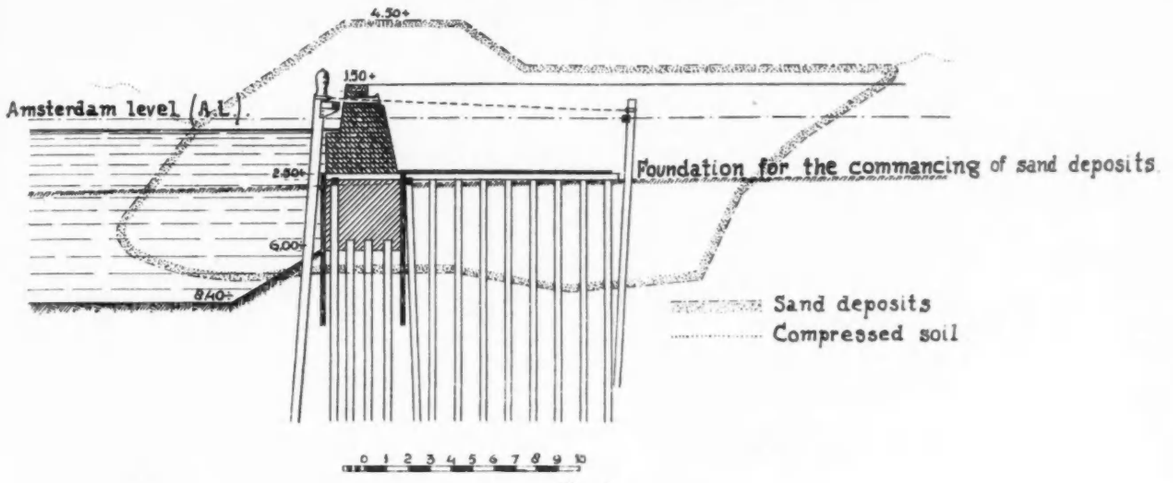


Fig. 3.

the work might be carried out at much less cost, it was gradually realised that the site should first be improved as much as possible as the only guarantee for the stability of the new land laid on it.

The progress in the size and design and improvement in dredging and dredger-transport machinery have, in a great measure, facilitated this work.

The methods of work pursued in the course of years may be summarised as follows:—

(a) Placing a deposit of sand upon the ground to be improved; without previous dredging;

(b) Dredging a channel for the purpose of facilitating the sand deposits to be made, or dredging to a slight depth only over the entire area of the worst upper strata, after which the deposit of sand is made;

(c) Dredging away, as far as possible, to a considerable depth, the most unfavourable strata and afterwards proceeding to deposit sand.

It need hardly be said that the expense of ground improvement according to these three methods differs considerably and that the choice chiefly depends upon local conditions.

As a rule the third method will be the most satisfactory, but this is outweighed by the fact that the expense is also the highest.

The method of ground improvement referred to under (a) was applied in the construction of a quay wall on the Commercial Quay (see Fig. 3) where sand was deposited at the normal depth of about 2.70 metres below A.L. The sand was dumped until it reached an average height of 4.50 metres above A.L., so that the mud and loose clay became heaped up or was swept up on both sides of the sand mass to some metres above the original bottom, while the sand penetrated in the loose strata to an average depth of 7.50 metres below A.L. The purpose of the ground improvement aimed at, viz., the pressing away sideways of the worst strata and the improvement of the strata lying below this by compression, was entirely successful.

Fig. 4 shows in section the system of quay wall as constructed along the Y Quay after having made the ground improvements described under (b). The nature of the soil was here generally less favourable than along the Commercial Quay. The sand for the improvement is deposited upon a base of soil that had previously been partially excavated to a depth of 6.50 metres to 7.50 metres below A.L. for the benefit of shipping, and where the bottom had not already been excavated, a channel was previously dredged, at the place where the sand-dam was to be sunk, to a depth of 6 metres below A.L.

On making a study of the cross-section, the advantages of this method of working are immediately evident, for not only has the sand mass penetrated to a much greater depth (on an average to 11.50 metres below A.L.) into the loose strata, but the great accumulation of mud on either side which in the case of (a) had to be removed after completion of the quay wall, does not occur, seeing that care had been taken to remove this beforehand.

An improvement of the bottom as described under (c) was carried out for the so-called *Steenenhoofd* at the *Westerdoksdijk* (see Fig. 5).

From the borings previously made (see Fig. 2) (borings E and F) it is clear that the soil of the permanent shore, in the direction of the Y becomes unfavourable to such a degree that the condition over the comparatively short distance of 200 metres varies from moderate to extremely bad. Considering that by the deposit of sand without any previous dredging, a great part of the sand dumped would have glided off in the direction of the Y with the probability of silting up the fairway for large ships, the worst strata were removed before making the deposits of sand. To that end dredgings were made along the margins of the main channels to a depth of 8 metres below A.L. near the permanent shore, and to 16 metres below A.L. along the head of the pier, while between the channels of the entire area the depth to which the dredging was carried was 10 metres below A.L. The sinking of the sand-dam was commenced in the channel along the end or head to a level of 2.50 metres below A.L. where support had to be found for the further deposits in the direction of the permanent shore. After the surrounding dams had been deposited to 2.50 metres above A.L., the intervening space was filled up to 2.90 metres below A.L. The direction of dredging and filling up with sand are given in section in Fig. 5.

Upon making a comparison between the first quay walls built in the Amsterdam dock area and those which were constructed in later years, it appears that the style, as such, has undergone but slight alteration. Materials have changed and have been generally modernised. The basic principle of a solid wall being borne by a foundation which, in its turn, is borne by a great number of piles, has remained unchanged.

For the transmission of the weight of the quay wall and the loads resting upon this, to a firmer basis by means of a pile

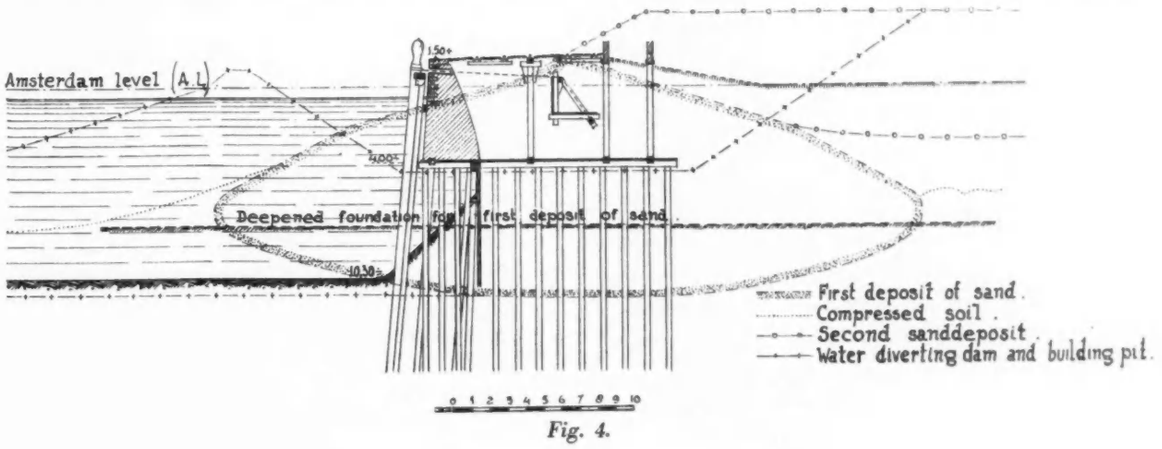


Fig. 4.

The Port of Amsterdam—continued

foundation, the condition of the soil lends itself exceedingly well, as piles can be easily driven through the loose soil strata and, if the piles are long enough, a sand plate can be reached of sufficient firmness practically everywhere throughout the dock area.

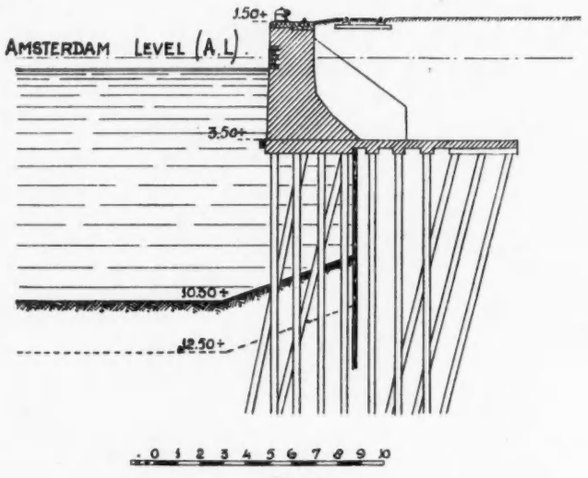


Fig. 6.

Further, a pile foundation has the advantage that after preliminary borings in the ground and after test piles have been driven, the length of the piles can be determined with great accuracy and by the selection of longer or shorter piles, according to the depth of the strata found, construction can be effected economically.

The function of the pile foundation is, however, twofold. It serves in the first place to transmit the weight of the quay wall to firmer strata and in the second place it plays a considerable rôle in compressing the strata by the ramming in of a great number of piles, so that the strata acquire a greater carrying capacity and are able to offer greater resistance against sliding.

Apart from other reasons, which will be referred to later, in favour of the building of quay walls at Amsterdam with wooden piles, the great value attached to the compression of the strata is the reason preference is given to wood as against concrete piles. Further, reinforced concrete piles are more expensive. A reinforced concrete pile of a section of 0.35 x 0.35 metres and a length of 15 metres, which can stand a load of 40 tons, costs in Amsterdam, including ramming, f. 160 or f. 4. per ton load. A wooden pile of the same length, with a diameter at a metre from the top of 0.40 metres, upon which a load of 25 tons can be placed, driven in, costs no more than f. 60 or f. 2.40 per ton load, so that the use of concrete piles is about 80 per cent. dearer.

Moreover, wooden piles, while being driven in, may be exposed to a much greater variation of form without breaking or cracking than concrete piles, and this factor is of great importance when ramming in buttress piles, where a hole has to be previously bored for these. In such cases the pile, in following the course bored for it, which does not by any means run straight, is frequently bent to a considerable extent.

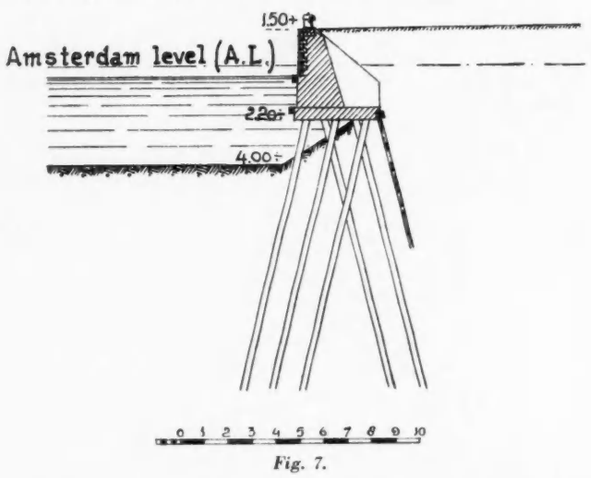


Fig. 7.

As a rule the pile foundation is formed of a number of piles, some of which are driven in perpendicularly while others are driven in obliquely.

With the older quay walls, the construction of which was based more upon practical experience than upon calculations, buttress piles were rarely if ever used (see the quay walls in Figs. 3 and 4). Though the entire side pressure had to be taken up, thanks to the resistance which the combined piles offered against bending forces, the quay walls have shown no sign of shifting.

In the quay walls of later times (see Figs. 6 and 7) sufficient buttress piles were introduced to receive the entire horizontal pressure.

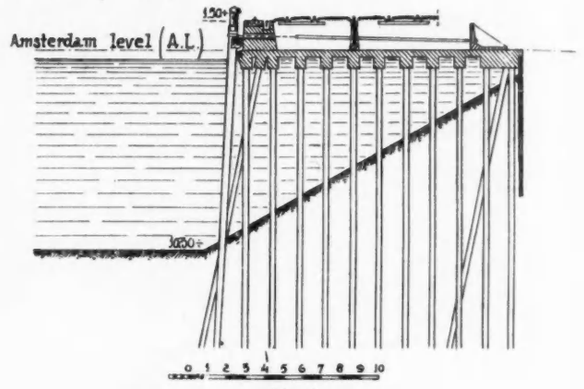


Fig. 8.

When making calculations for one of the quay walls recently constructed in the *Coenhaven* (see Fig. 6) it was ascertained:

(a) That the depth of water before the quay wall shall be about 12 metres.

(b) That the upper side of the abacus lies at 1.50 metres above A.L.

(c) That the normal level of water in the Port of Amsterdam is as a rule about 0.40 metres below the level and seldom rises to the level.

(d) That the load of the wharf area may be 4,000 kgrs. per sq. metre.

(e) That the angle of the natural slope is about 27 degrees.

An important part of the wall construction is formed by a sheet-piling which must prevent the soil from penetrating into the harbour. Generally the piling is placed immediately under the backside of the wall itself.

The quay wall is, as far as possible, anchored by means of anchor-piles being driven in the soil at the back of the wall throughout the whole length.

Construction with sheet piling entirely in front is not as a rule adopted in the Amsterdam quay walls, though such construction need not be any the less stable. The objection to this manner of construction is that the sheet-piling has to be much longer and heavier, and in case of collision is more easily exposed to damage, while the buttress piles beneath the wall have to be moved more to the rear so as not to come into contact with the piling.

In the quay wall built in 1877 at the south end of the Commercial Quay (see Fig. 3), there is a double sheet-piling in front of the wall, between which concrete was poured in. This concrete caisson, however, not only serves to keep the ground back, but was put there principally to protect the piles rammed in behind the sheet-piling against destruction by the pile-worm.

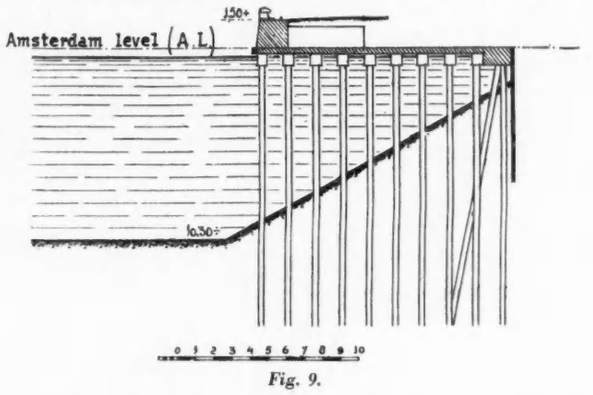


Fig. 9.

After the opening of the *Noordzeekanaal* (North Sea Canal) it was at first feared that, in consequence of the sea water being admitted through the locks at Ymuiden, the pile-worm would penetrate to the Port of Amsterdam. It subsequently proved, however, that there was no danger of the pile-worm in the brackish water of the Port of Amsterdam so that this form of construction was no longer necessary.

The foundation of the quay wall serves to join piles together, both in the length and breadth of the quay and further as a

The Port of Amsterdam—continued

base for the actual quay wall and the ground strata behind this. The load of the upper ground strata is conveyed to the floor and so does not influence the ground under the floor; thus the pressure of these strata against the sheet piling is diminished. The depth of the floor depends, in the first place, upon the material that is used for its construction. The floor or foundation was formerly composed of head-beams, upon which a floor of wood was laid. The head-beams coupled the piles crossways, while the floor beams bound them lengthways.

As a matter of course, with such a wooden construction, the floor had to be laid below the lowest level of water occurring in the port, to protect it against rotting. With the reinforced concrete floors now being used, this need not be taken into account at all. Other considerations have, however, led to a deeper position being selected for the floor, which is generally laid at a depth of 3½ to 4 metres below A.L.

The deeper the position of the floor the heavier and more stable will the quay wall be and it will offer greater resistance against bumping, to which the wall, along which large sea-going vessels are berthed, may be exposed. Again, shorter piles may be used, a fact which, especially in the eastern dock area where the firmer strata lies at a great depth, was of great importance.

A disadvantage of the foundation being laid at a greater depth is that the foundation pit also comes to lie so much lower and owing to this, a heavier and more solid damming off is required. Though this might elsewhere be a consideration in favour of giving the floor a higher level, in the eastern dock area where, in most cases at all events, the construction of quay walls has to be preceded by ground improvement, this consideration did not apply as the sand serving as extra load, and also that which had been removed from the foundation pit, was able to serve as a water-diverting dam.

The quay wall itself, in the older quay wall construction, is built as a "piled-up" wall, but in the newer wall as a monolith of rammed concrete on the water-side covered with columnar basalt from 1 metre below A.L. to the bottom of the abacus. The 20 or 30 centimetres abacus is mostly of Norwegian or Silesian granite having a similar hardness, because the abacus also serves as support for the outside crane-rail which is anchored to the granite by means of rail-chairs.

Though the quay wall construction described undoubtedly offers great stability and is also the cheapest, in recent times quay walls of another type have also been built.

At places where the fairway is in the vicinity of the quay wall to be constructed, it is not always possible to construct a water-diverting dam without seriously hampering shipping. The enclosure of the building pit by a caisson dam would then certainly be possible, but owing to the considerable size of such a cofferdam in the deep fairway, the quay wall would become extremely expensive.

Fig. 10.

In such cases the style illustrated in Figs. 10 and 11 can be successfully adopted. The first time this construction was adopted in the Port of Amsterdam was when building the landing stage on the De Ruyterkade for Messrs. van Es and van Ommeren.

The style of construction subsequently adopted in the construction of quay walls, though in a somewhat revised form, is possible in this port because the average level of the water in the port is 0.40 metres below A.L., the highest A.L. and the lowest 0.60 metres below A.L., while, as a rule, the water levels only fluctuate between 10 cm. below or above the average water level.

The construction is really to be conceived as a kind of jetty, with which the slope is built over till the required depth of water is attained at the front. It consists of a heavy reinforced concrete plate that is borne upon and connected with a pile foundation (see Figs. 8 and 9).

In a quay wall constructed some years ago on the Surinamekade, the distance between the piles was 2 metres in the longitudinal direction and 1.40 metres in the other.

The sheet-piling in this case is built at the back of the floor because with a position situated more to the front, owing to the higher position of the quay wall floor, the dimensions would have to be very long and heavy.

Fig. 11.

Though but slight horizontal strains operate on this construction, in order to avert any horizontal movement at the back of the floor plate a trestle construction was used consisting of a vertical pile and a buttress pile coupled by an arch and provided against gliding by means of an oak wedge-shaped log.

Any horizontal movement is thereby also prevented because the floor plate also serves as foundation for a section of the warehouse to be built behind the quay wall.

A trestle construction where the vertical pile does service as a mooring post (capable of resisting being pulled out) is necessary here because, in contrast with the quay wall construction upon a low foundation, scarcely any upper load is present whereby the buttress pile is capable to supply a horizontal force.

The length of the piles used in the quay wall abovementioned was 21 to 23 metres and the thickness 28 to 34 centimetres measured at half length.

The piles were rammed in as near as possible to the water line and were then provided with a round peg, the top part of which is situated at 0.60 metres below A.L., i.e., about 15 cm. below the average water level, and the peg-shoulder at 0.90 below A.L. The piles are always submerged and are therefore protected against rotting.

To facilitate the handling of the piles under water, a wooden caisson is used, in the bottom of which a circular hole is made having a diameter some centimetres greater than the diameter of the pile to be driven in. After the caisson has been secured against floating upwards by means of iron clamps and the crevice between the pile and caisson has been filled up with a ring-shaped jute belt filled with moss, it can be baled out and two foundation workers can begin work (see Figs. 10 and 11).

(To be continued.)

The Port of London Authority

Tilbury Passenger Landing Stage.

Thirty-one vessels, representing 272,065 gross register tons, used the Tilbury Passenger Landing Stage during the month of June.

Altogether 4,100 passengers were embarked or disembarked at the Stage, together with considerable quantities of baggage and mails, the average time taken for each vessel being 1 hour 15 minutes.

Italian Harbour Affairs

ACCORDING to statistics, which have been published by the Istituto Centrale di Statistica, shipping at Italian ports during the period from January to June 1931 included the following items:

1931	ARRIVALS No.	ARRIVALS N.R.T.	ARRIVALS Goods Tons	CLEARANCES No.	CLEARANCES N.R.T.	CLEARANCES Goods Tons
January	13,686	6,118,000	1,826,000	13,723	6,188,000	606,000
February	12,370	5,715,000	1,796,000	12,383	5,821,000	573,000
March	14,914	5,785,000	2,196,000	14,819	6,592,000	643,000
April	15,912	6,428,000	2,063,000	16,063	6,398,000	663,000
May	18,155	6,893,000	2,179,000	17,958	6,905,000	661,000
June	19,657	6,638,886	2,385,362	18,781	6,451,005	673,350
	94,694	37,577,886	12,445,362	93,727	38,355,005	3,819,350
1930						
January	14,343	6,028,000	2,296,000	14,310	5,992,000	770,000
February	12,490	5,941,000	2,042,000	12,483	5,850,000	644,000
March	15,124	6,834,000	2,495,000	15,060	6,772,000	725,000
April	15,897	6,499,000	2,231,000	16,048	6,581,000	777,000
May	18,206	6,785,000	2,309,000	18,218	6,800,000	762,000
June	18,781	6,454,000	2,323,000	18,707	6,471,000	755,000
	94,841	38,541,000	13,696,000	94,826	38,466,000	4,433,000

As can be seen from the above figures the statistics for June, 1931 are showing a marked improvement in respect to the previous months of this year, and, even as far as imports are concerned, in respect to June, 1930 but the figures for the period January—June 1931 are still showing the influence of the general economic crisis, and the final results for 1931 will much depend upon the developments which will take place in the course of the next few months. Yet there has been a decided revival in the imports of oilseeds at Genoa, and a noteworthy development of the Czech sugar transit trade through the port of Trieste, so that there is reason to believe that the improvement noticed during June may continue. In connection with the share which Adriatic ports have had in these developments, it may be interesting to note that at Trieste, imports by sea reached, during the first six months of 1931, 822,583 tons against 748,351 tons during the corresponding period of 1930, showing an increase of 74,232 tons, while exports have reached 298,075 tons against 377,069 tons, a decrease of 78,994 tons. The net decrease at Trieste is about 4,000 tons in six months. On the other hand imports at Venice reached 1,135,731 tons against 1,233,045, and exports 251,922 tons against 233,764 tons. Imports have shown a decrease of 97,314 tons and exports an increase of 18,158 tons which means a net decrease of 79,156 tons. The decrease has been larger at Venice than at Trieste. Figures for Genoa are also showing a slight decrease.

The Scandinavian Shipowners are showing an increasing activity in the port of Genoa since both the Danish East Asiatic and the Swedish East Asiatic Lines are now calling regularly to and from the Far East.

The Cantiere Federale at Pietra Ligure has undertaken the construction of two large steam pontoons and several suction dredges for carrying out harbour enlargements.

However, the most striking event in the port of Genoa, has been the inauguration of the new dry dock measuring 269 metres in length. However, it ought to be taken into consideration that it is not a newly built dock. It should be recalled that in 1929 a new dry dock, 240 metres long, was completed, the construction on which was started in 1926, in the presence of the King of Italy. The decision of the Navigazione Generale Italiana and the Lloyd Sabaudo to build two new liners of 50,000 gross tons, raised the question of the suitability of the 240 metres dock to overhaul such large ships the length of which is 265 metres. The Ente Bacini, which owns the dry-docking facilities at Genoa, took up the matter and decided to lengthen the 240 metres dock to 269 metres. It is this work which has been terminated just now in little less than a year, without interrupting the use of the dry-docking facilities of the port. The work is rather noteworthy considering the difficulty of undertaking a similar construction at a level varying from 15 to 20 metres under sea level, and the importance of the works themselves, viz: the laying down of the caissons first, and the building of the walls. At the same time that the dry-dock has been lengthened the overhauling facilities, etc., have been improved. At present Genoa has the following dry-docking facilities:

	Length	Breadth	Draught
A	170	29.40	8.50
B	210	24.90	8.00
C	269	32.00	11.00

and, therefore, this harbour has the largest dry-dock in the Mediterranean, and the most efficient facilities for overhauling an average sized vessel in less than 24 hours. The pump room is situated 8.50 metres under sea level. Four turbo pumps are provided, having a capacity of 40,000 tons per hour so that in less than two hours and a half after a ship has entered the dock the repair works can be started. The pumps are fitted with pipes having a diameter of 2.80 metres. The docks are fitted with four electric cranes, one of which has a lifting capacity of 20 tons, hydraulic windlasses, etc. The supplies of fresh water, sea water, condensed air and electricity output plants which are provided by the Ente Bacini S.A. enable a ship to get all the required supplies during the time she is being dry-docked.

According to an official announcement made by the Government, a credit of 4 million lire has been allowed to carry on important harbour improvements at Trani.

Following information which had just been published by the Italian Government, shipping at Massowah, an Italian port in the Red Sea, included the arrival of 245 ships representing 572,205 n.r.t. with 54,239 tons of goods in 1930, against 224 ships, 597,604 n.r.t. and 71,541 tons of goods in 1929; and the clearance of 243 ships, 550,753 n.r.t. and 85,198 tons of goods in 1930 against 226 ships, 601,951 n.r.t. and 86,118 tons of goods in 1929. In connection with shipping at other Italian colonies during the month of May, 1931, Tripoli (Lybia) showed arrivals and clearances of 118 ships representing 168,523 n.r.t. carrying 19,175 tons of goods.

Important repair works are being carried out to quays and piers in the Free Port Vittorio Emanuele III., and Free Port Duca D'Aosta at Trieste by the Royal Italian Engineers Corps.

The question of increasing shipping at Italian ports, is the main subject of discussion in Italian shipping quarters, and, according to communications received from Genoa, the Government of the Union of South Africa in order to facilitate the exports of agricultural products, fruits, frozen meats, wools, etc., in Central Europe, has decided to create in Genoa a centre for these exports to Italy, Switzerland, Southern Germany, and Eastern Europe. In consequence of the Italo-Russian trade agreement, which has just been signed, the Russian Government has decided to establish at Trieste a base for the export of coal to Austria and Czechoslovakia, at Fiume a base for the export of coal to Hungary and Jugoslavia, and at Bari a base for the oil trade in the Eastern Mediterranean.

The question of harbour improvements in the port of Palermo is again being taken up. According to the law of April 20th, 1929, the following works had to be carried out to a value of 214 million lire: (a) construction of an outer breakwater measuring 600 metres in length, at a depth of 40 metres; (b) dredging the port to a depth of 9 metres with the exception of the zones used by coastwise shipping which have to have a depth of 7.50 metres; (c) construction of two piers measuring 320 metres in length and 60 metres in width, and (d) construction of additional piers and quays in the old port and on the area of the old Castellammare Fort. The breakwater is practically completed, and the superstructures are to be built, but it has been found that this work has not led to any improvement in connection with the rough water in the inner harbour. Furthermore, since the construction of two piers in the inner harbour would impede the movement of ships, a single pier of about 300 metres has been built. In shipping quarters at Palermo it is being urged that the dock for coastwise trade, and particularly the sailing vessels, be transferred to another part of the port, and that warehouses with electric cranes and a grain silo be built in the new docks in order to attract transit trade through this port. It should be considered that in order to favour the development of shipping at Palermo the Società di Navigazione Florio has established a new express service between Palermo and Tripoli with a number of motor liners of 5,400 tons gross and capable of a speed of 19 knots. Palermo has also become the centre of several air services connecting Sicily to Rome, Venice and Genoa, and to Tripoli and Tunisi, while Italian transatlantic lines in order to enable American tourists to land a day earlier in Italy, has included the port of Palermo in the schedule of their North and South American services.

The harbour improvements and enlargements decided by the Italian Government to be carried out at Fiume are progressing satisfactorily. A large dockyard has been built in the Prelucca Bay west from the port of Fiume, and it is anticipated that within the next two or three years the improvements will be completed, and it will then be possible for the lumber trade to have its own loading dock.

Aden Port Trust.

The returns for the month of April, 1931, of shipping using the port were as follows:—

	No.	Tonnage
Merchant Vessels over 200 tons ...	127	516,296
,, ,, under 200 tons ...	5	858
Government Vessels	12	27,324
Dhows	121	3,451
PERIM.		
Merchant Vessels over 200 tons ...	33	108,407

The number of merchant vessels over 200 tons that used the port in April, 1931, was 127 as compared with 118 in the corresponding month of last year, and the total tonnage was 516,000 as compared with 483,000.

Excluding coal, salt, fuel oil and military and naval stores and transhipment cargo the total tonnage of imports in the month was 7,600 and of exports 5,600, as compared with 9,200 and 4,900 respectively for the corresponding month last year.

The total value of imports excluding Government stores was Rs.41,66,000/-, as compared with Rs.54,79,000/- for April, 1930, and of exports Rs.29,78,000/-, as compared with Rs.43,16,000/-.

The total value of both imports and exports together was Rs.71,44,000/-, as compared with Rs.97,95,000/- for the corresponding month last year.

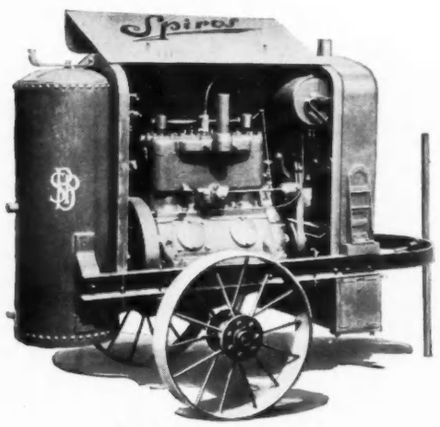
TRADE OF THE PORT.

Article.	Unit.	Imports.		Exports.	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal	Tons	4,647	1,06,927	0	0
Coffee	Cwts.	7,040	2,60,976	7,501	3,27,264
Grain, Pulse and Flour	,,	58,419	2,17,461	28,648	1,40,441
Gums and Resins	,,	7,368	1,57,119	4,710	95,603
Hardware	—	0	15,589	0	16,252
Hides, raw	No.	3,710	6,395	6,560	14,080
Oil, Fuel	Tons	22,244	6,67,320	0	0
,, Kerosene	Gls.	49,648	37,058	24,328	18,424
,, Petrol	,,	208	260	1,744	2,300
Salt	Tons	0	0	14,900	1,58,000
Seeds	Cwts.	2,028	17,509	463	7,081
Skins, raw	No.	276,368	1,71,054	317,540	2,33,648
Sugar	Cwts.	8,275	53,154	12,512	78,601
Textiles—					
Piece Goods, Grey	Yds.	4,251,213	6,73,305	4,278,220	7,04,844
,, ,, White	,,	575,682	1,22,982	298,454	73,309
,, ,, Printed or Dyed ..	,,	933,419	1,98,165	819,950	2,29,926
Twist and Yarn	Lbs.	164,400	78,070	146,354	82,622
Tobacco, Unmanufactured	,,	332,416	83,844	550,060	1,02,700
,, Manufactured	,,	32,928	36,824	38,808	46,166
Other Articles	No. of Pkges.	63,007	8,55,398	23,484	3,86,197
Treasure, Private	—	0	4,06,356	0	2,40,638
Total ...	—	—	41,65,766	—	29,78,396

Trade Notes

Spiros Air Compressors.

The British Steel Piling Co., Ltd., of 54a, Parliament Street, London, S.W.1, have been appointed sole concessionaires for the manufacture and sale of Spiros Contractors' Pneumatic Equipment for the United Kingdom, and they can be bought outright or obtained on hire on very attractive terms from the British Steel Piling Co., Ltd.



A Spiros Air Compressor.

These machines are used for breaking up roads, trenching and any other demolition or excavation work. They can be used for working pick-hammers, rock drills, clay spades, and many other tools, and they are also of great use to the structural engineer for rivetting, rivet-busting, chipping and hammering.

Any of our readers who would like to have a copy of the leaflet describing these air-compressors, and which is known as list No. 138, can obtain them on application to the British Steel Piling Co., Ltd.

Messrs. Verschure and Co.

Messrs. Verschure and Co., of Amsterdam, have received an order for the building of one Pneumatic Floating Grain Elevator, steam driven, with a capacity of 250 tons per hour, for Amsterdam, and two Pneumatic Floating Grain Elevators, Diesel driven, of the same capacity for Antwerp.

Quasi-Arc Co., Ltd.

Since his return from a tour of the British Empire, Major James Caldwell, M.Inst.C.E., M.I.E.E., has accepted the invitation of The Quasi-Arc Company, Ltd., to join their Research Committee and assist in extending the application of electric welding to welded steel construction.

S.S. Strathaird.

The s.s. "Strathaird," a new 22,000 tons Turbo-Electric ship which has been under construction for the Peninsular and Oriental Steam Navigation Co., by Messrs. Vickers-Armstrongs Ltd., was launched at their Barrow Shipyard on July 18th.

Ruston-Bucyrus, Ltd.

Messrs. Ruston-Bucyrus, Ltd., the well-known excavator manufacturers of Lincoln, England, have recently added several improvements to their No. 4 excavator. The No. 4 ½-yard excavator needs no introduction to our readers, but the recent improvements—which are as follows—will prove of interest:— New cast steel under carriage. New simplified travelling gear. More ground clearance. Lower bearing pressure on the ground. Simplified cab steering from a single lever by the side of the driver while the machine is in motion. Controls taken through the centre post. Digging brake, a unique Ruston-Bucyrus feature. New shovel jib. New shovel bucket, with cast steel back. Deeper trench, 16-ft. instead of 14-ft. Greater dragline radius, 30-ft. jib instead of 28-ft. New housing with more windows. New Diesel engine special excavator type, an exclusive production from the factory of the associate firm, Messrs. Ruston and Hornsby, Ltd., and the result of pooling the experience of both firms.

Scottish Notes

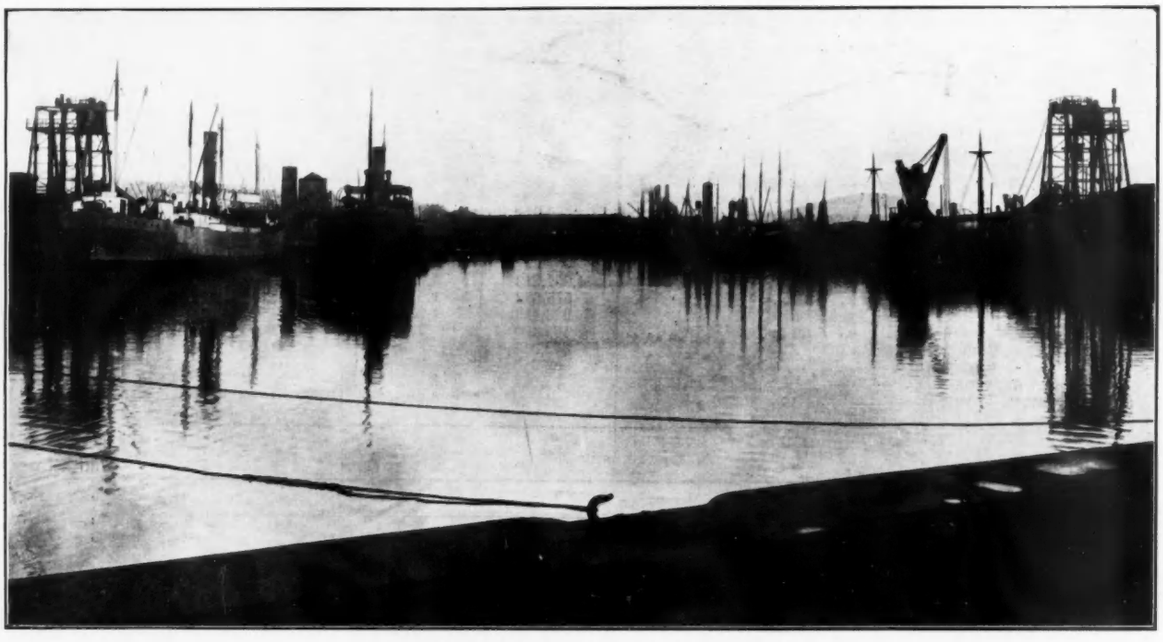
Wick Harbour Revenue shows a Decrease.

IT was intimated at a recent meeting of Wick Harbour Trustees that the revenue for the month of June was down by £455 as compared with the same month last year, and likewise by £1,073 for the financial year. Members blamed this partly on the fact that the local harbour requires deepening, and complaints were voiced at the alleged dilatoriness of the Fishery Board in not supplying a dredger as promised. The Trustees have commenced operations on a scheme estimated to cost £23,000, and dredging is required for the foundations. It was suggested by Provost Duchart that this work should be stopped altogether. Wick had not got one penny from the Development Commissioners (he complained) while Fraserburgh had got pound for pound of grant along with a loan for £13,000. It was ultimately agreed that the work should be stopped until the Fishery Board sent their dredger, and it was decided to communicate this decision to the Board.

Aberdeen Harbour Inspected.

Important statements were made by Lord Provost Rust and Shoremaster Walker after a recent inspection of the local harbour by Aberdeen Harbour Commissioners. Referring to the question of harbour rates, Lord Provost Rust asked if any reduction was possible. Leith and Dundee were the principal competitors of Aberdeen (he added) and a comparative statement of the financial affairs of Aberdeen and Dundee for one year was interesting. In round figures the money borrowed during the year by Aberdeen amounted to £882,000, and by Dundee £488,000; Aberdeen's revenue for the year was £152,000; while Dundee's was £136,000; and Aberdeen's contribution towards interest and the expense of loans and sinking fund was £63,000 and Dundee's was £37,000. In Aberdeen the percentage which revenue bore to money borrowed was 17 per cent. and in Dundee it was 28 per cent.; and in Aberdeen the percentage which sinking fund and loan charges bore to revenue was 40 per cent., while in Dundee it was 27 per cent. These (added the Lord Provost) were facts and figures which they could not get away from. It might be that in days that were past they had laid to capital account a larger sum than they should have done, but in face of these facts and figures what was the hope of a reduction in rates? He was afraid it was very small indeed.

In the course of his remarks, Shoremaster Walker referred to the great changes which had taken place at the Aberdeen Harbour since the last official inspection which had taken place seventeen years ago. The capital expenditure of the Commissioners during the period (he said) had amounted to £410,000. The works dealing with the improvement of the Fishmarket accommodation—including the extension and widening of the Fish Market wharf and buildings—had been undertaken jointly with the Aberdeen Town Council, and, on the completion of same the accommodation for the landing of fish would be equal to the accommodation provided at any fishery harbour in the country, and would form a valuable contribution on the part of the city and the harbour towards the success of the fishing industry. Further schemes of harbour improvement were under consideration and would be brought forward later. "In our harbour," commented Shoremaster Walker, "the citizens of Aberdeen have an asset of the highest importance to the prosperity of the city and an undertaking which has been fostered by the citizens during its long and honourable history."



The L. & N.E. Railway's No. 2 Dock, Methil.

Western Island Piers to be Repaired and Modernised.

Recently in the House of Commons the question was asked the Secretary of State for Scotland if he had considered the copy sent to him of the resolution passed by the Glasgow Associations of Invernessshire: Skye, Lewis and Harris, Uist and Barra, Mull and Iona, Jura, Ross and Cromarty, Oban and Lorne, and Islay and Mid-Argyll, calling on the Government to modernise and repair properly the piers in the Western Islands, and (if so) if he would state what action he proposed to take in the matter. Mr. Adamson replied to the effect that the answer to the first part of the question was in the affirmative. As regards the second part of the question, however, legislation would be required before this matter could be comprehensively dealt with, but he hoped before long to communicate with the local authorities concerned. In a supplementary question another member asked if there would be taken into consideration the fact that new and larger boats found great difficulty in approaching the piers on account of their primitive nature, and also on account of the absence of breakwaters, and the reply by Mr. Adamson was that all such points would be kept in view.

Reconstruction of Inverness Harbour.

At a recently-held meeting of Inverness Harbour Trust a letter was submitted from the Unemployment Grants Committee stating that they were prepared to sanction a grant for the re-construction of the local harbour on condition that this work was commenced by the beginning of July and finished within eighteen months of its commencement. It was explained to the meeting that there would be no difficulty in starting this work by the date specified, and the hope was also expressed that local labour would be given preference in the execution of the scheme. In the further course of business it was intimated that the collections at the harbour for the thirty-eight weeks preceding were £2,501, as compared with £2,845 for the same period last year, showing a decrease of £344.

New Dry Dock to be Constructed at Scotstoun.

Great interest has been aroused at the announcement of the construction by Messrs. Barclay, Curle and Company, Limited (of Clydeholm Shipbuilding Yard) of a large dry dock at Scotstoun and possibly also a new fitting-out wharf. The cost of the scheme will run into several hundred thousand pounds, and will involve extensive excavation and construction work, dredging, and the provision of fitting-out plant and equipment which will give employment to thousands of craftsmen of various trades for a lengthy period. The site of the proposed

Scottish Harbour Notes—continued.

graving dock is as Messrs. Barclay, Curle and Company's Scotstoun Repair Works and West Shipyard. The new dock will be 620-ft. long and 85-ft. wide at the entrance, and the depth on sill (at high water during ordinary spring tides) will be 28-ft. The mouth will be about 300-ft. from that of the firm's existing dry dock. Widening and deepening at that part of the river will also be required.

It is interesting to recall that this scheme of Messrs. Barclay, Curle and Company's was originally put forward in the year 1919, and it is understood that the long-continued negotiations between this firm and the Clyde Navigation Trust have now reached a satisfactory conclusion. This scheme includes the construction of a new wharf and the strengthening of the quay wall, and, if carried out in its entirety, the scheme will give the firm what will be virtually a harbour in itself with easy access to the river, rail and road transport facilities. Up-to-date equipment will be provided for the expeditious handling of heavy machinery and materials. At their Govan and Elderslie ship-repairing works, Messrs. Barclay, Curle and Company are capable of dealing with over 750,000 tons of shipping annually, and with the projected new facilities this may be increased to 1,000,000 tons. The tonnage launched by the firm last year (nearly 65,000 tons gross) was the highest on the River Clyde.

Local Harbour Dues at Inverness Considered High.

At another meeting of the Inverness Harbour Trust the question of the local harbour dues was raised by the Shell Mex Company, Limited, who urged that the dues existing at Inverness compared unfavourably with those in force generally and asked the Trustees if they were prepared to make a revision of the dues in their favour. The Clerk has replied pointing out that the dues for motor spirit chargeable at Aberdeen are 2s. 6d. per ton as compared with 1s. 11d. per ton, and that the dues chargeable at Leith are somewhat similar to Aberdeen. The Trust (after discussing the matter) intimated to the company that, in view of the large expenditure which is involved in carrying out the harbour improvement and extension scheme, they are unable meantime to make them any reduction in the dues.

Port of Southampton Topics

Fast Work on site of New Graving Dock.

HAVING battled continuously by day and night for upwards of six months the Southern Railway Company's engineers have this month emerged triumphant from their initial labours on the site of the new graving dock, 1,200 feet long, which is to be built at Millbrook to accommodate the giant Cunarder at present under construction.

The preliminary work took the form of cutting off a considerable area of mudland from the River Test, and this was accomplished by building an enclosing bank of chalk and dredged material, and surrounding the entire site by inner-locking steel sheet piling. The work of excavating, the second phase of the battle, is being started forthwith.

Since it is vitally necessary that this great graving dock should be completed by the autumn of 1933—meaning that not a moment can be lost—it is very gratifying that the enclosing of the site has been carried out entirely according to schedule. As long ago as last November the engineers in charge stated that they would get the enclosing bank completed by the end of June, and as the sluice gates were dropped at 5 a.m. on June 30th their forecast was correct to a remarkable degree. There is confidence among those whose duty it is to carry on the work that the time-keeping schedule will be maintained.

The preliminary work has included the driving of 7,000 feet of interlocking steel sheet piling. The existence of foreshore on the northern and western boundaries of the site obviated the necessity of building banks on those sides. The whole area has, however, been enclosed by steel sheet piling, and in the driving of that a new world's record for this type of work was established.

The bank was made partially by depositing dredged material and partly by dumping chalk brought to Millbrook by train from northern Hampshire. In the depositing of dredged material the bank-making craft Bankwell, specially built for the James Dredging, Towage and Transport Co., Ltd., for the Docks extension work, proved invaluable.

When the sluice gates were dropped into position it was dead low spring tide, so that the amount of water which had to be pumped from the enclosed area was much less than would normally be the case.

Messrs. John Mowlem and Co., Ltd., and Messrs. Edmund Nuttall and Co., Ltd., who are co-operating, have already started work on the excavation, and mechanical excavators are busy removing the mud. They are built on caterpillar tracks so that they can secure a grip on the soft surface mud. The material they pick up in the great shovels in transferred to waggons which run on a rail laid on the harder subsoil as soon as it is exposed. It will be necessary to excavate to a depth of 87 feet below the final quay level, and this will involve lifting over 1,000,000 yards of material, equal to 1,250,000 tons.

In view of the urgency of completing the enclosing bank in connection with the graving dock there has been a temporary lull in the building of the reclamation bank for the second section of the Docks extension scheme, but in the past few weeks it has been possible to spare some of the necessary plant, so that progress is again being made.

Activity on the first section of the extension has proceeded uninterruptedly, and the foundations for the first two passenger and cargo sheds are now in an advanced state. Great progress has also been made in the reclamation of the 187 acres of mudland which have to be won back from the river under the first stage of the scheme. In this connection the vessel Foremost Chief has been pumping ashore 50,000 tons of dredged material each week.

The machinery necessary for the new Pumping and Electricity Sub-station, built on reclaimed land, has now practically all been installed.

Newfoundland Salmon discharged at Southampton.

The foundations of what may be a great trade for Southampton have been laid during the latter half of the past month, when 10,000 boxes of Newfoundland salmon were discharged from the steamer Blue Peter into the International Cold Storage and Ice Company's premises at Southampton.

As yet the exportation of salmon from Newfoundland, Britain's oldest colony, is in its infancy, but some idea of the extent to which it has already prospered may be gathered from the fact that 6,000,000 lbs. of the fish reached the shores of the Motherland last year. Those shipments passed into the country through other ports, but Southampton has made such a big impression by the manner in which the present consignment has been handled, that it is almost a foregone conclusion that she will enjoy a very considerable share of the trade in the future.

The Blue Peter is a ship which is a complete factory, and can deal with fish from the time it is caught until it is prepared for the table. Some of the fish are canned, and some are chilled, both operations taking place on board.

Lt. Col. J. B. P. Karslake, a member of the committee of the Hudson Bay Company, speaking at a luncheon to celebrate the Blue Peter's arrival, said they might regard the Blue Peter as the advance guard of a great fleet of similar ships which he hoped would be coming into Southampton.

North German Lloyd Line and Southampton.

The results of the "understandings" arrived at by the North German Lloyd and the Ozean Line, both of which have had services out of Southampton, are becoming more and more apparent.

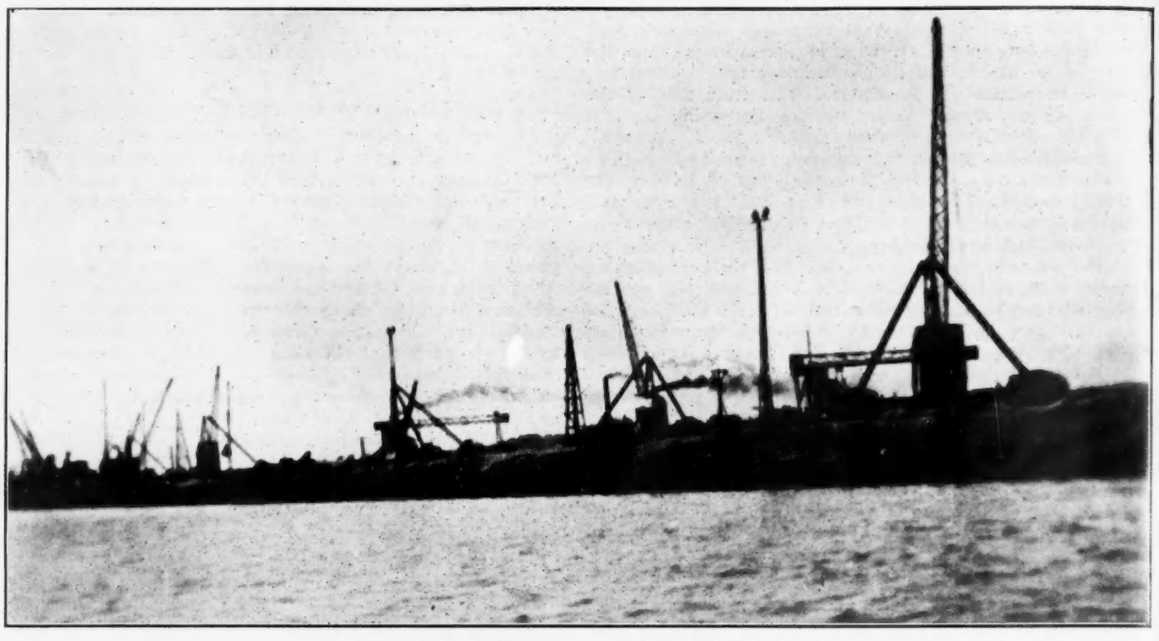
Steamers of the North German Lloyd hitherto engaged on the service to South America or to Vera Cruz have not called at Southampton. Even in the pre-war days the North German Lloyd's South American vessels did not call at Southampton, although there were several other services that had a connection with the port.

In addition to the New York ships there was the service to the Far East, another to Australia, and yet a third to Boston. The vessels in those days, in the majority of cases, came to the Docks for mails and passengers, and quite a big business was done with all parts of the world.

Now the North German Lloyd have secured control of the Ozean Line more of their ships are seen at Southampton. Hitherto, vessels of the Rio class, the Rio Panuco and the Rio Bravo among them have made their appearances at Southampton, but a curious thing has happened this month. The service has been left entirely to the North German Lloyd ships, and none of the Ozean units are in the schedule.

The first of this month's callers was the Werra, outward bound for Vera Cruz, and a few day's later the Seydlitz called on her way home. Both these ships are normally on the service to Argentina and Brazil, but on these trips they are made to serve the Vera Cruz route.

Port of Southampton Topics—continued



View of Docks Extension Work at Southampton.

During the month a through service between London and St. Malo, via Southampton, has been started on a regular fixed time-table. Hitherto the service has been a tidal one.

Statistics for June show decreases.

The effect of the depression in the North Atlantic passenger business, as far as Southampton is concerned, is illustrated by the Docks statistics for June. In recent years the figures for June have revealed increases.

This time the figure of passengers has dropped by 6,620. Inward there was a decrease of 3,018, and outward, 3,502. The totals were 29,510 and 25,281.

However, Southampton's title of premier passenger port is not likely to be affected, as the decline is being experienced in the rival ports of Liverpool and London.

Several other decreases appear in the statistics, which, however, are an improvement on those for the previous month. The number of vessels dropped by 11 inward, and 15 outward, the totals being 381 as compared with 392, and 381 as against 396. The gross tonnage inward, despite the fall in the number of vessels inward, advanced by 33,201, but that gain was swallowed up by a decrease of 82,898 outward. The inward total was 1,750,250, and outward 1,630,061. The net tonnage returns showed inward 905,657, against 897,157 tons, but outward 847,732 in comparison with 900,294.

It is a long time since an increase in the volume of cargo handled has been recorded, but that was made possible in June by an increase in imports of 7,841 tons, the total having risen from 58,129 in June, 1930, to 65,970 last month.

Exports were again down—36,438 tons as against 40,812, a decrease of 4,374. However, a net advance of 3,467 tons of cargo in these depressed times is something to be pleased about.

Improvements for Navigation at Southampton.

Trinity House are considering the improvements of the aids to navigation at Nab Tower, concerning which the Southampton Harbour Board have made representations to them.

In a letter to the Harbour Board, Trinity House stated that the question of installing a wireless (radio-beacon) fog signal is receiving the attention of the Standing Wireless Direction Finding Committee appointed by the Board of Trade to advise on the development of wireless. As regards the aerial fog signal, the Elder Brethren are prepared to consider improving it, but before embarking on a definite scheme they intend to carry out experiments with the reed signal (to ascertain whether a more effective range could be secured by lowering the position of the signal and/or fitting one or more additional horns), and also with a submarine oscillator for use in conjunction with the contemplated radio-beacon, to ascertain whether its efficiency would be unimpaired by reason of its close proximity to the Tower.

Bremen's Seagoing Shipping Traffic in May, 1931

In May 788,668 net registered tons arrived at Bremen. This was an increase against April of 66,563, or 9 per cent., but a decrease by 44,761, or 5 per cent., as compared with May of the previous year. The lack of northern timber importation of which in normal times begins in May, is probably the reason for this decrease. Tonnage arrived during the first five months of the year was 3,473,877 net registered tons, against 3,701,134 net registered tons in the same period of the previous year. According to this, traffic was 227,257 net registered tons, or 6 per cent. lower.

Seaborne goods traffic of the five most important Weser ports showed an increase in May as compared with April. Imports reached 268,900 tons, or 35,600 tons, equal to 15 per cent. more. Arrivals of cotton had their seasonal decrease; on the other hand, however, supplies of mineral oil, rice, phosphate and ore, among others, were considerably larger. As compared with May of the previous year, however, there was a decrease of 32,500 tons, or 11 per cent. less, due to the above-mentioned lack of timber, which alone amounted to 35,000 tons. Exports in May were, with 172,100 tons, 9,100 tons, 6 per cent. higher than in April; but, due to smaller export of potash, piece-goods, etc., were 27,000 tons, equal to 14 per cent. less than in May, 1930. Imports and exports together amounted to 441,000 tons. That is, 44,600 tons, or 11 per cent., more than in April and 59,500 tons, or 12 per cent., less than in May of the previous year.

During the first five months of the year 2,083,900 tons were imported and exported against 2,732,400 tons in the same period of the previous year. According to this traffic has decreased by 648,500 tons, or 24 per cent. Of this, 471,100 tons, equal to 27 per cent., fell to imports and 177,400 tons, or 18 per cent., to exports.

A New Grab.

In our issue for July we drew attention to the "Octo" Grab which had recently been marketed by Messrs. Priestman Bros., Ltd., Hull.

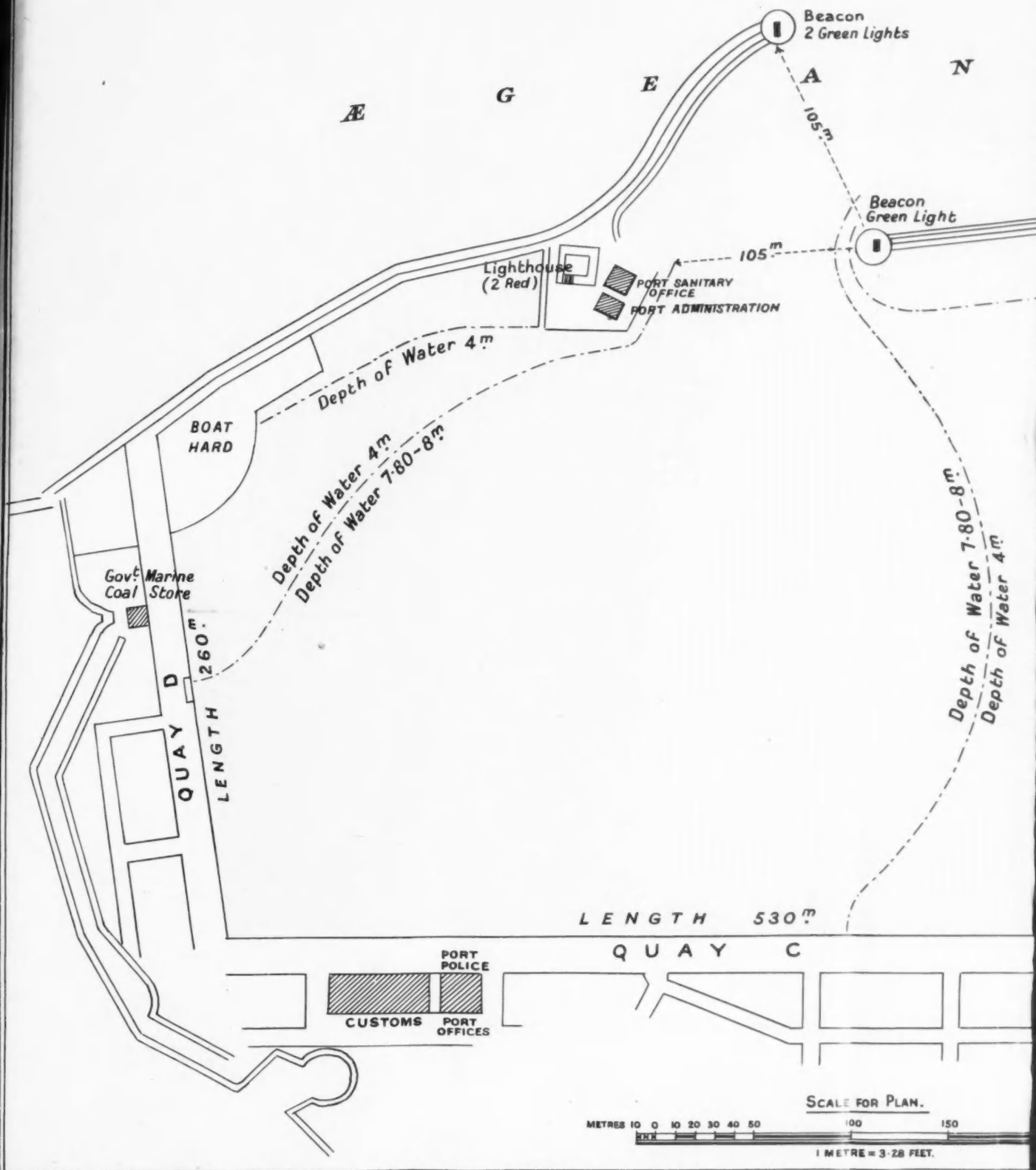
The attention of Messrs. Priestman Bros., Ltd., has been drawn to the fact that Messrs. E. Peter Jones and J. H. Middleton, who are associated with The Wolverhampton Corrugated Iron Company, Ltd., Ellesmere Port, Cheshire, are the proprietors of the Registered Trade Mark 479844 "Octopus" in connection with the Octopus Grabs which are marketed for them by Messrs. Craven Bros. (Manchester), Ltd.

In order to avoid any confusion, Messrs. Priestman Bros., Ltd., have given an undertaking to discontinue the use of the name "Octo" in connection with their Grabs.

PORT OF CHIOS.

(ARCHIPELAGO)

UNDER THE JURISDICTION OF THE SOCIÉTÉ ANONYME DU PORT ET DES QUAIS DE



WARD & FOXLOW LTD. (LITHOS). 19.

T ET DES QUAIS DE CHIOS.

Lights

N

S E A

Beacon
Green Light

Depth of Water 4m

Depth of Water 7·80-8m

Depth of Water 4m

Depth of Water 4m

Depth of Water 2m

LENGTH 242m

QUAY B

LENGTH 203m

QUAY A

FOR PLAN.

0 150 200 METRES

RE = 3·28 FEET.

A FOXLOW LTD. (LITHOS), 19, HARCOURT STREET, W.1.